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ESSAYS ON
THE LOGIC OF BEING

by
FRANCIS S. HASEROT

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TO
PROFESSOR A. H. HERSH

οὕτω καὶ τῷ ὄντι ἢ ὄν ἐστι τινὰ ἴδια [παθη] καὶ
ταῦτ' ἐστὶ περὶ ὧν τοῦ φιλοσόφου ἐπισκέψασθαι
τὸ ἀληθές.

ARISTOTLE

PREFACE

The following pages constitute a few observations on some of the fundamental categories of metaphysics. Metaphysics, as interpreted in the present writing, is ontology. The Aristotelian position (1) that metaphysics is the science of being and (2) that it is a logically simple and an ultimately prior science (cf. *The Metaphysics*, 1005 b), is the position accepted.

Among the ontological categories, according to the view with which we are concerned, is that of value. Since this is a category of particular significance, a special part, namely, the second part of the essays, is devoted to it. In this section divers considerations regarding the status of value are discussed which furnish grounds for the thesis referred to, i.e. that value is an ontological category.

It remains only to say that if there exists any adverse pre-judgment as to the native worth of metaphysics for anyone who will pursue it in the spirit of investigation and with a certain candidness of thought (i.e. without the tacit concealment of categories which, in his thinking, he actually uses) it is hoped that the ensuing inquiry will contribute, partially, at any rate, to dispel it.

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PART I

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Omnia, quae ex absoluta natura alicujus
attributi Dei sequuntur, semper et infinita
existere debuerunt sive per idem attributum
aeterna et infinita sunt.

SPINOZA

•

COMMUNICATION

1. Every philosophy presupposes a theory of communication and conversely every theory of communication implies a philosophy. Thus there may seem to be, at the outset, in the exposition of either, no point from which to depart. But the two are correlated and it is valid to begin with either, retaining the proviso that a metaphysics must observe, in its composition, not to introduce premises which make communication impossible, for in so doing it belies the communicability of itself. The latter condition is only admissible for a strictly private metaphysics. A philosophy, however, which purports to be communicable and lacks a theory of language may find that it has, by its own axioms, fallen into a solipsism of inexpressibility.

2. A theory of communication is not a simple and nicely restricted affair. It ramifies into the fields of logic, psychology and ontology. It cannot be treated adequately without recognizing these aspects of it. It is, nevertheless, if not in fact, yet in order, a necessary preface to everything that is to be embodied in language.

3. Communication implies the existence of two or more individuals and is sometimes regarded as a transmission of a thought or a feeling from one to the other. But such a passage, at least in the extant forms of communication, does not occur, for thoughts and feelings are not the kinds of things which cross *per saltum* from one body to another. What does occur is a suggestion, ostensibly common to several individuals, such that the awareness response of one is similar to that of the others.

4. Let us take for example the word, *line*, in the proposition: that line is straight. This word, as others, possesses a double relation: (1) to the thing it represents, namely, the line, (2) to the speaker. We have the relation: subject, word, object.

5. The question at once arises as to whether the word refers to the object itself or to what the speaker sees as the object. But since what the speaker sees *is* the object (Essay on Aware-

ness, par. 15) and conversely the object is what the speaker sees we are justified in asserting that the word refers to the object. The subject, in applying the word to a particular, attends to what he sees. But when we introduce a hearer the hearer refers the word rather to what *he* sees and what the two men see may differ.

6. In so far, however, as the word represents similar perceptions in both organisms the process of communication may be said to occur. The point which determines this process to be communication is thus not a passage of something from one individual to another but the presence from the same stimulus (i.e. word) of corresponding responses in the communicating organisms. For this reason the word communication may be taken quite literally, namely, the making of something common to two or a number of communicants.

Communication then we shall provisionally define as the awakening of similar responses, by means of a common stimulus, in different individuals.

7. But this definition is not complete, for a common stimulus may give rise to similar responses without the presence of communication e.g. an equation written at random by some third party may suggest the same curve to two or more observers. What is it then which transmutes the relation into one of communication? This consists simply in the stimulus issuing from the communicating party. When this occurs there is, provided the stimulus evokes similar awareness responses, communication. The communication is more complete in so far as the responses are more similar. How far communication can be adequate we shall consider in another place.

8. It is sometimes asserted that the communication is fictitious unless another element is added, namely, that the two parties A and B are aware that they have similar perceptions. But since the stimulus or medium of communication may fulfill its purpose without carrying with it a knowledge that such has been the case, the postulation of the mutual awareness of similar responses as an essential of communication is unnecessary. Communication can occur whether the parties are aware that it has occurred or not and experience seems to show that in a con-

siderable proportion of cases it remains quite undetectable whether or not there has been any genuine communication.

9. Another stipulation has been advanced as requisite to communication and that is that the communicator should act intentionally. This, however, is not essential; many instances of unintentional communication occur daily. Not only are there occasions of unintentional communication but of counter-intentional communication as, for instance, when a man communicates to another that which he expressly desires to conceal from him. This occurs, for example, when protests are so emphasized that they suggest that what is uppermost in the attention of the speaker is the opposite of what he is saying. Communication may be intentional or unintentional; it is not the purpose of the speaker which gives it its character as communication.

10. At this point we may draw the distinction between the process of communication and the state of communication.

It is quite accurate with respect to the process of communication which involves the causation of a stimulus, to require that the instrument of this causation be the communicating party. From this the state of communication arises but this state may originate also independently of the process and one might say paradoxically that there is communication without communication, meaning in the first case the state, in the second, the process. The state of communication consists in the possession owing to a common cause (which may be general) of similar awareness-elements. The cause itself does not have to issue from the communicator but may come fortuitously from the external world. Two people who see the same thing are in a state of communication about that thing (i.e. the cognition of it is common to both of them) even if the thing is not revealed to either by the action of the other. Two scientists who arrive independently at the same conclusion are in a state of communication even though the process of communication might be required to make this evident. Where the state of communication exists and is known the process is not employed since in the first place it is not necessary and in the second it is impossible. You cannot communicate an item which the hearer already knows: communication is only from known to unknown. If a man tells

another that a cubic equation has three roots and the other is already aware of this fact there has been no communication: it is the same as painting a surface which is already white, white.

11. It is only owing to the presence of a state of communication, however, in regard to some things at least, that the cognate process is possible, for if organisms were aware of nothing in common they would be unable to make anything so. Every word that the one used would be meaningless to the other.

SPECIES OF COMMUNICATION

1. The most general divisions into which this process falls are those of: direct and indirect, presentative or representative, immediate or symbolic. The first terms of these contraries apply to the same species, the second to its alternative.

2. Direct communication consists in imitation. When B imitates A, A or some characteristic of A is the immediate cause (i.e. the stimulus) for B's responses. There is no symbolic medium e.g. sign or word between them—only the perceptual media. A causal process proceeds from the one to the other but there is in it nothing representative. When a child imitates its parents in language learning or in other types of learning it does so directly because it lacks for the most part the very means of indirect communication. This learning by example or imitation is apt to be by far the most effective method of learning since it has a concreteness about it of which language falls short.

3. The great difference between imitative communication and mediated communication is that the former requires a simple recognition of particulars only. It is communication from particular to particular and hence is available for an organism lacking intellect, for intellect consists in the cognition of universals and their relations.

4. There are as many kinds of imitation as there are types of explicit behavior. The exposition of these, however, is beyond our present purpose which is simply to indicate the nature of imitation as direct communication. We shall therefore advance to a consideration of the nature and kinds of indirect communication.

5. Indirect communication is communication by means of symbols; it is either native or acquired.

The status of native symbols or natural signs is not completely nor easily determined. It is obvious that humans are not born with a full-blown language and hence it is inferred that

language is a racial acquisition. But if we go back to any point at will and assume that no symbolic means of communication were present at all it is difficult to see how subsequent acquired modes could arise. Unless some communication is native or original, none at all can come into existence. By a sign or symbol which is native is meant a sign whose significance is directly apprehended without the need of interpretation. If no such signs ever existed it is evident that signs which require interpretation could not arise.

6. These native signs reside, in all probability, in expressions of the eye, tone of voice, facial contraction and general muscular attitude; in gesticulation, emotional interjection and on the graphic side in imitative drawing or painting. Much is yet to be learned about the nature of original, that is untaught, language and the study of communication among animals and of the immediate responses of infants should disclose many relevant facts. The problem of distinguishing native from acquired modes of communication is one for exact psychological analysis. It leads in turn to the problem of reconstructing the transition from limited native sign language to the use of acquired and developed language which problem falls to the linguistic anthropologist.

7. Native sign language seems to be the only, or at least the principal one to which animals attain if they may be said to attain to any. It is probable, therefore, that language evolved concomitantly with the evolution of humans from antecedent forms. Thus if we are to search for its origins it must be among other animals rather than primitive men. As the reticulation of the nervous system became more differentiated and complex, setting up wider and wider cerebral association areas, the possibility of representational communication widened. The utility of such communication being great—we may assume almost magical—struggle and selection tended to its development. It is possible that this is the cause of the extreme evolutionary gap between man and animal. Language once started would weed the non-linguistic members of a social group out. In this way acquired symbolic communication could arise.

8. Of acquired communication there are three primary

kinds: (1 and 2) that part of spoken and written language which is not native; (3) art.

The first two we shall consider in another essay but it may be appropriate here to discuss for a moment the nature of art as a means of communication. It has been said that all art is a form of language i.e. it is representative. This, however, is an exaggeration. Each one of the arts—architecture, sculpture, painting, poetry, drama, narrative, music, dancing—has elements of representation (in varying degrees) in it. But art is not necessarily a means of communication. Some art is merely presentative; its end is simply to produce a certain effect upon the observer. The work itself may represent nothing e.g. certain designs, melodies, color-arrangements, etc. and yet though they communicate nothing may possess decided esthetic value. The idea that art must be a means of communication has been the cause of much shallow esthetic criticism and considerable triviality in artistic production. One of the common expressions of this is the endeavor to produce realistically descriptive music, as though, for example, a concerto had to stand for something other than itself in order to have a *raison d'être*. If it did, would this in any way enhance its esthetic value: it cannot be said that a thing is beautiful *because* it refers to something else even though some such things are for other reasons beautiful. The realistic theory of art hardly proves to be an adequate one, therefore, because according to that theory art would be reduced to meticulous representation which experience shows it not to be. A work of art may be wholly, partly or in no way representative. The point is that the characteristic of representation does not constitute its esthetic claim. The question of representational realism is not, in other words, relevant to the nature of art. Art may or may not be communicative. The further meaning of these propositions about art we shall consider in another place.

LANGUAGE

1. We are now prepared to ask the question: how far is language an effective means of communication? By language we refer to the use of spoken or written words.

2. Communication may be perfect, partial or merely apparent. Perfect communication involves the presence in both A and B of an exactly similar cognition with respect to the subject-matter communicated by the words.

3. Now words may refer either to particulars or universals. That responses shall be completely similar with respect to particulars is not to be supposed. For particulars are known by perception and perception includes elements from the perceiver as well as from the perceived. Perception takes place in accordance with perspectives and the perspectives of individual observers differ. Hence the phrase: that tree, will refer for A to his perception of the tree; for B to his. But the perceptions will differ, thus rendering the communication partial.

4. We see at once that there is a whole range of things which are not communicable except in an imperfect sense. All communication, in short, in language which refers to particulars is relative and defective. This deficiency occurs, however, in greater or less degree. Where there is no similarity between the thing suggested the communication is not even partial but merely apparent. This happens in cases of homonymy, for example, if one says that such and such a thing was immaterial to him, and this is construed by A to mean not-material, by B to mean indifferent. This type of homonymy represents the extreme case but in fact all naming or verbal indication of particulars is a form of this process.

5. The nominalists who hold that nothing but particulars exist are, if this be true, reduced to a point of view which, if taken strictly according to its thesis, admits of none but fictitious communication and this applies likewise to their own philosophy. It may be said that in expressing their point of view they

make themselves inarticulate, namely: they cannot express themselves without self-contradiction.

6. As communication referring to the perception of external objects then is partial so is that referring to internal states: feelings, emotions or appetites. Perhaps this is where communication seems most real and is most defective. Expression of affection for example refers to a particular instance of a given feeling in the speaker. But the expression may have one reference for A, another for B. Thus an outward harmony of expression would seem to indicate an inner harmony of feeling when in fact the correspondence is one of language only. That this frequently occurs needs no demonstration. Humans who seem to be very close in their affections may, without discovering it for considerable time if ever, be in truth temperamentally far apart.

7. Every individual is, more than he knows, a world within himself. He is a unique and isolated point of perspective from which the panorama of being is envisaged. His particular perceptions and affections are peculiar to himself, and language, for these affairs, though the most convenient means of communication, is defective. The meaning of his words in so far as they refer to particulars cannot bear equal significance for another person. If the individual could know how isolated he is he would probably feel much like a stranger in a country whose language he could not understand. Owing, however, to the tacit but erroneous assumption of the communicative efficacy of language his gregarious nature is satisfied and the disadvantage of isolation is unnoticed.

8. We next have to ask: how, if communication is inaccurate we can discover to what extent this inaccuracy reaches. The primary way to find this out (and this is defective) is by inference from behavior. This is best seen in the use of the sentence. Sentences may be declarative, interrogative or imperative. Whether a declarative i.e. categorical sentence, about particulars is understood or not is practically impossible to detect. Such a sentence may evoke certain behavior: an assent, an action or a response which indicates comprehension. But that that comprehension exists for the hearer in the sense in which the

speaker has assumed it, is quite beyond the range of investigation to discover. All words of the hearer, much as they may be appropriate in general, refer only to the products of his private perception. Communicative agreement between hearer and speaker may be assumed; it cannot, in a strict sense, be demonstrated even from behavior.

9. Obedience to command, response to request or answer to question seem, indeed, to imply accurate communication; but again we get a specious agreement. Let the order of A's experience be $x_1 y_1 z_1$ and the order of B's $x_2 y_2 z_2$. x_1 is to y_1 as x_2 is to y_2 although x_1 and x_2 are different. Let the word for A's x_1 be k . Then x_1 is to k , for A, as x_2 is to k , for B; y_1 is to l as y_2 is to l ; z_1 is to m as z_2 is to m . Now A may command, request or ask the following: k - l e.g. get the book, will you get the book, have you the book. B may correspondingly reply, k - l . But in the case of A the reference will be to $x_1 - y_1$ while in that of B it will be to $x_2 - y_2$. There may be in other words a parallelism of relations without an identity of items which gives rise to a verbal agreement but a real disagreement. The item seen through A's eyes and the item seen through B's eyes are different though they are given the same name. Since their relations may be parallel, however, the accuracy of the communication can be sufficient for practical situations. But frequently it is not; and the subsequent discovery of the ambiguity is often accompanied by a painful disillusionment.

10. Expression, in sum, referring to particulars is relative and there is in the dictum: say exactly what you mean, a factor of presumption. For "to say exactly what you mean" is to superimpose the auditor on the speaker and this would be a bit difficult. To approach the perfection required by the dictum, it would be necessary to take into account the history, constitution and position of the hearer, since communication with him depends on his nature as much as on that of the speaker. There is no absolute—say-exactly-what-you-mean—where particulars are concerned.

THE POSSIBILITY OF EFFICACIOUS COMMUNICATION

1. Since no accurate communication concerning particulars can be expected we next have to ask whether and under what conditions it can occur.

2. The basis as well as the possibility of accurate communication is concerned with the nature and presence of the universal. When the universal becomes the object of discourse communication may be complete.

3. While A and B, in regarding particulars, are subject to the peculiarities of their individual constitutions and hence cannot have the same impressions of the same thing they may both participate in a like cognition of the universal in which those particulars are comprehended. When such is the case a word or phrase can exist which denotes the same item for both and in this way may arise a common knowledge of the same thing which is the *sine qua non* of accurate communication. The relation is clearly illustrated by a reference to number. While any single particular will have different aspects for A and B yet to each of them its unity in the form of singleness will be the same; so also the duality or other number of items will be the same although the items differ. Five things may make on two observers different and peculiar impressions but the nature of five is the same for each. We can hence refer in language to the numerical character to which the things conform and this communication is equivalent and flawless for all.

4. This relation between language, communication and universals holds not only for mathematics but for the whole ontological range of universals in so far as they are clearly known. In the science of number universals are readily comprehended—awareness of them is clear and distinct—but the authority which this science has acquired rests not simply on the clarity and conclusiveness of its theorems but also on the effectiveness of its communicability.

5. Since it is the presence alone of the universal which makes language in the rigorous sense of the word i.e. as accurate communication, possible—and the acquisition of the awareness of universals and their relations is the essence of thinking—accurate communication is a matter not of feeling or perception but of thought. All communication is to a greater or less degree apparent rather than real except that of the intellect. This thesis is contrary to the common point of view which derives from the representation of feeling and perception the sense of communication. But the world of things is only ineffectively representable in language; the intelligible world alone is that which is communicable.

6. From this it follows that the greater the capacity for the awareness of universals and their relations, the greater the power of accurate communication and the less the isolation of the individual from his fellows. The absence of this capacity renders discourse ambiguous and confused and carried to its extreme, it reduces communicative processes to the merest sign language of animals. On the other hand as the awareness of universals and their relations is developed a technical terminology is devised which defines the intent and the extension of words. Language in its capacity for accurate communication reaches, at this point, its highest efficacy. General language is vague, indefinite, diffuse; the language of thought is precise, defined, constant. The former is valuable in inverse proportion to the advance of thought. A science or philosophy attains adequate communicability in so far as it comprehends and renders explicit relevant universals. It becomes less communicable in so far as it is concerned simply with particulars, or rather, things in their particular aspects. The picture of incommunicability for all time fixed, is the nominalist Antisthenes mutely pointing at that which he can never name.

WORDS, APPARENT

1. Each part of speech represents in general some item in being. This does not mean that there is an exact parallelism between the structure of language and the nature of things; nor that all languages are confined to the same set of divisions. Grammarians have not yet discovered definitions of the parts of speech (not to mention their inflections) which are precise enough to fit all instances in actual usage.* And it is hardly possible that this will occur for the character of language is historical rather than systematic. Nor have they discovered the same parts of speech in all languages: in certain languages, for instance, the indication of time (in European languages the function of the verb) is rendered by a system of noun affixes.† But regardless of how words in their syntactical relations are classified there is some general relation between their classification and the subject-matter to which they refer. This is clear enough with respect to nouns, adjectives, verbs and adverbs; with respect to prepositions, conjunctions and articles it is not so clear. But prepositions for the most part represent relations; and conjunctions, the intent of the speaker to consider two or more items together. The parts of speech, however, selected, have something to do with the signification of words i.e. with the things to which they refer.

2. A word then is a sound or mark which has content. This content consists either in an external item referred to or in a function performed in an expression which contributes in giving the expression a certain qualified meaning. Instances of the latter type of functional word are: in English, *and*; in Greek, *av*. These, however, are recognized as words not because they are names of the characters of things but because they are indicators of the type of reference which other words are used to represent. All words are either names or functional words; i.e. they

* Otto Jespersen, *The Philosophy of Grammar*, p. 92 (1924).

† Eskimo.

have content. When this content is lacking the ostensible word is not a word but a sound or a mark. Sounds or marks in themselves are not symbols; every word is a symbol. The distinguishing mark of a word is that it has content.

3. When sounds or marks are used as if they had content but have not they constitute a class of stimuli half-way between mere sounds and words. These sounds or marks are what we shall call apparent words. Apparent words differ from genuine words in that they lack reference; they differ from mere empty sounds e.g. nonsense syllables, in that they seem to have reference. They are strictly psychological phenomena and on account of their specious nature are very important in human affairs. They constitute the undefined catchwords to which men may attach their most intense emotions.

4. Whether words are real or apparent does not depend upon the words themselves but on those who employ them. A word has content as content is attributed to it. To the individual who gives a word reference it is a genuine word; to him who does not, it is an apparent word. Thus the content which a word has depends on the individual who employs it and whether a given sound is a word or an apparent word is not the consequence of its being in current usage but rather of the kind of usage for which it is employed by the persons who use it. There might be a dictionary of real as distinguished from apparent words but for the most part it would have to be a private dictionary which each one compiled for himself. And it would, moreover, be constantly varying.

5. Since the content of words is given them by their users each individual so far as he applies words to particulars makes his language himself and possesses it, not in common, but singly. The perception of particulars, as we have seen above, is different for different individuals and as such perception makes up the content of words referring to particulars, language composed of these words is private to the users. The sounds employed may be general; the references are peculiar to the single organisms. Language in these respects is relative; it is relative to the peculiarities of perception and feeling and to the range of knowledge of the individuals employing it. Every one has his own language

and there are as many languages as there are communicating individuals.

6. The use of apparent words gives rise to apparent knowledge. Apparent knowledge is a form of double ignorance i.e. ignorance of one's ignorance. It was against this that Socrates directed his analytic critique of the slipshod meaning of common words. There is nothing so easy as to fill up a gap in one's knowledge by an empty verbalism provided only that it have something grandiloquent in its sound. This device has been a favorite in the history of learning from time immemorial.

7. When apparent words are employed merely for talking's sake as occurs in much conversation, an innocent pleasure is derived therefrom which issues from the emotional catharsis effected. Talking nonsense is a satisfaction of which humans are not to be deprived. But there is an element of danger in it when individuals become serious and lose the sense that they are talking nonsense. This becomes evident from the common use of apparent words to arouse and promulgate expansive feelings. In political and ecclesiastical oratory such terms as infinite, eternal, liberty, justice, courage, democracy, nobility, national honor, right, wrong, patriotism are promiscuously employed to inflate the emotions of credulous hearers and produce the impression either of glory or profundity. When nonsense utterance takes this turn it is apt to result in more disturbing and retrogressive consequences than those of the steady, genteel and pacific spread of double ignorance propagated by educational institutions.

8. We next have to inquire into the cause of apparent words. If words which are used lack content why do they have any effect, why are they endowed with power? Such words adroitly handled have stimulating force and seem to have meaning. Why do they have this force whereas a series of nonsense syllables would not, though content in each case is absent?

9. The *raison d'être* of apparent words lies in conditional response, in the association of sound and action such that the presence of the one elicits the expression of the other. Certain sounds—in this case vocables—are made to act as stimuli for explicit and implicit responses. When the sounds are uttered

they exercise a trigger effect—because the nervous system has by habituation been set for them—in releasing physiological activity. Responses ensue irrespective of any extraneous content-references which the sounds may have.

10. Let us take the word God for example. This word though it may acquire content certainly has none for an infant. If it did the word would be the same in all languages. The child learns first by imitation, the behavior correlated by his elders and the community at large with this sound. Next, in consequence of repeated instances, habitual responses are set up or, in other words, nervous arcs are formed such that the appropriate muscular and visceral activity is released when the stimulus occurs. Now for the rest of its life unless some extraneous factor dissolves the association, the organism responds to the given sound in the habitual way i.e. in a manner precisely the same as that involved in the flow of saliva or gastric juice in the presence of food. The feelings experienced in consequence of the use of the word are habitual implicit responses which may occur quite independently of any content associated with it.

11. Humans like animals may be conditioned to respond to sounds in two ways: either internally or externally. Internal responses become evident in visceral modifications and emotion, external in muscular activity and locomotion. Words which release these responses, particularly emotional words, seem to have content whether they do or not. There is a subtle unnoticed rationalizing which says: because I am intensely affected the words must have great meaning. The conclusion is obviously a *non sequitur*.

12. Having thus indicated the process by which vocables pass into apparent words it remains to be said that, in ontogenetic development, the general tendency is for words to arise from spoken sounds, first becoming apparent, then real, words. It is needless to say, however, that a great body of the individual's vocabulary or phraseology remains principally in the category of the apparent. The majority of humans to a great extent, and all humans to some extent, live and move linguistically in a world of stimuli rather than in a world of meanings. And this accounts for the total oblivion or the inconsistency which men

frequently evince towards the significance of their own utterances. Apparent words differ from sounds in that they evoke responses; from real words in that they have little or no referential value.

In conclusion we shall propose certain propositions relevant and corollary to the above.

The affectional value of words may be independent of their content.

A word without content may have high affectional force.

Words without content but with affectional force seem on account of this force to have content.

Expressions e.g. philosophies or religions, which give rise to inspirational feelings are not for this reason either true or meaningful.

In so far as organisms possess the capacity for sentiment only apparent words have greater affective power.

In so far as organisms possess the capacities for emotion and intellect together, the affective power of words will be in proportion to their meaning.

A population intellectually untrained will be subject to the despotism of jargon.

WORDS: THE ACQUISITION OF CONTENT

1. In the actualization of a language a double process takes place: sounds are given content and contents are given sounds. If new items appear or if new conceptions arise they are named. If, on the other hand, a word is heard the content of which is unknown the hearer endeavors to give it a content. In the reciprocal action of these two processes language, for the individual, comes into being i.e. it passes from apparent to real, from vacuous to intelligible, symbolism.

2. Our problem here is to see how we become aware of the things that words refer to, namely, of the items which furnish the substance of the above processes. In so doing we shall have to anticipate somewhat the discussion of the universal and hence it is suggested that the reader refer to the essay on that subject. As the awareness of the individual widens he seeks or invents expressions in which to render his thoughts. With this extension of awareness comes the acquisition of content for language. We are referring here, however, not so much to etymological histories, which are primarily social matters, as to the process by which the individual comes to attribute meanings to words.

3. We have seen above that words or any symbols refer either to particulars or universals.

Particulars are perceived by the senses or by imagination. By repetition of concomitance between the thing perceived and the vocable, an association is established such that the word comes to represent the thing. The visual cerebral centers (or those of whatever sense is employed) are affected simultaneously with the auditory centers. The auditory centers are coordinated with the muscles of the throat and a nervous arc is established in accordance with which the afferent currents initiated in the sense organs are translated into efferent currents which innervate the organs of speech. In this manner associations between words and things are established and words referring to particulars acquire content.

4. The question, however, of the relation of word to universal brings up the problem of the development of awareness of universals and their relations. Since it is in this manner that a large proportion of words attain reference it will be desirable to direct our attention as closely as possible to an analysis of this subject.

5. There are three ways in which awareness of the universal arises: 1. It is concomitant with the perception of its correlated particular. 2. It is derived from the perception of the particular. 3. It is induced by words. Each of these three modes is an instance of the process of suggestion. All awareness of universals, therefore, is obtained by suggestion i.e. suggestion operating in the manner referred to.

6. Suggestion is an ultimate psychological process: it is not analyzable into more fundamental categories. We say that A suggests B when awareness is directed to B as a result of the presence of A. Certain factors such as resemblance, contiguity, concomitance, or contrast may be given as reasons for the occurrence of this suggestion. Certainly humans vary tremendously in the range of suggestibility which objects have for them. There are probably more factors at work than those indicated. But whatever the ground of suggestion is taken to be, suggestion is itself a process which we cannot go behind. It may be said that one object suggests another because it resembles it; if we go further and ask why this resemblance evokes suggestion an answer is not available.

7. Of the kinds of suggestion two are fundamental: first where A suggests B, both A and B having been previously known. This occurs in instances of associative memory. Second where B has not been previously known i.e. A suggests an item B which previously existed outside of the knower's range of awareness. In this type of suggestion genuine learning is involved since the knowledge of B becomes a new acquisition. It is this type of suggestion furthermore that is operative in the cognition of the universal.

8. Certain universals as we have said are suggested in this manner concomitantly with particulars. These universals are simple and fundamental and since they are involved in every

particular the presence of any particular furnishes the basis for a suggestion of them. One of the first particulars, however, which the human becomes aware of—i.e. aware of in relation to other things for there is no other kind of awareness—is his own body. And from awareness of his body as a particular arises a concomitant awareness of the ontological fundamentals which that body involves. Hence arises the awareness of such universals as being, unity, many, part, whole, extension, place, duration. These are sometimes called native or innate and in one sense they are, namely, in the sense that awareness of them arises concomitantly with the awareness of the body which necessarily involves them in its existence.

9. Universals, however, vary in complexity and their power of being suggested varies in inverse proportion to this complexity. The simplest universals i.e. primary categories are immediately and adequately suggested by particulars. Any individual suggests being or unity. When we go, however, to highly complex universals e.g. man, or protoplasm, the particular if it suggests the universal, does not do so immediately but only after rigorous examination. The attainment alone of adequate perception of the particular is hard since the particular is ever changing and the cognition of the universal of which the particular is an instance is as difficult as the latter is vacillating. Empirical science is constantly trying to attain this cognition but its results are ever provisional because of the fluidity of its subject matter.

10. In so far as awareness of simple universals is attained immediately from the body itself e.g. that of points, lines, planes, quantitative relations, sciences may be deductively constructed from these. But in so far as awareness of universals is dependent on antecedent perceptual examination of other bodies science is first inductive and proceeds from approximation to ostensibly closer approximation.

11. We have now considered how the awareness of universals arises; we next have to ask how this awareness becomes attached to words.

A particular having become associated with a word may suggest that word by associative memory or conversely the word

may suggest the particular. Where, however, a particular suggests a universal the universal will be associated not only with the particular but with its name. In this manner words referring to universals acquire content.

12. The question vital with respect to language, however, is: can words, i.e. the names of universals, possess the power to suggest universals previously unrecognized; can words be used to induce, with respect to universals, the second type of suggestion?

13. A single word (unless a compound containing new syllabic reference) can evoke nothing except by the first process i.e. by the revival of cognition previously attained. A group of words which are names of universals where the content of each is known, may, in the form of a definition, suggest a previously unknown universal. Such occurs in the formation of such symbols as a° or in the exposition of the binomial theorem or in any instance of mathematical induction. Here particular instances are observed, words formed and the fundamental structural basis for every instance of the process indicated by deduction. It goes without saying that the position taken here is that mathematical formula have ontological content; not, to be sure, in the world of particulars *per se* but in the articulated formal structure involved in the existence of that world. Thus by means of words when they are real, not apparent, we may go from universal to universal through a whole related series. Herein lies the power of language as an auxiliary to thinking. The unknown, e.g. the unrecognized universal, in this manner becomes known through the known and we pass from words, the content of which we are aware, to words to which we give a content suggested by other words.

14. This brings us directly to the question: can cognition of universals i.e. thinking, take place without words.

To this we make our answer in the affirmative. If particulars suggest universals a nameless particular may possess this power as well as one that is denominated. In fact the name assists in the passage from the individual to the essence and in some cases seems indispensable, but in a vast majority of ordinary instances it does not. There is nothing contradictory in the

cognition by a wordless individual not only of one universal suggested by a particular but of the whole logical order connected with that universal and thence to universal logical order. Such would certainly be difficult for mortals but the point is that thinking, while it never or rarely is, *may* be, independent of language.

15. Returning now to our thesis that words may suggest universals we ask what consequences this has for communication. First it is owing considerably to this fact that apparent words, for a given individual, acquire content and become real words. The growth of meanings resulting from suggestion fills out and gives body to the otherwise empty verbal forms of language. As a result of this acquisition of content by words adequate communication i.e. communication involving universals may occur. And hence a philosophy or a science may be communicated from one individual to another even though, as we have seen, all communication concerning particulars is inadequate.

LOGIC

1. The problem of the nature of logic is part of the philosophy of language for the function of logic consists in rendering language as efficacious as possible for the advancement and the communication of thought i.e. for the cognition of items in being. Without language thought is possible for there still may be awareness of the universal, its relations to other universals and to particulars. Without language (i.e. symbolism of some kind) however, thought has no instrument; awareness passes directly from one thing to another or not at all. Instances of logic therefore are instances of language functioning as the means of thought and the common forms in which these instances participate constitute the universe of pure logic. Take away symbolism and you take away logic although you do not remove its content.

2. Logic rests on two bases: one in language and the other in being and it cannot be separated from either nor described in terms of one alone. Terms and propositions without reference to content are empty: logic is more than verbalism. The study of being, however, is not formal logic itself but an application of logic. It constitutes ontology and ontology is not the study of verbal logic although it implies a verbal logic provided it employs language which, of course, it must.

3. Unfortunately a point of view can never be stated all at once. Parts which co-exist have to be treated in succession and hence there is a continual back and forth reference which renders integration incomplete until the whole is envisaged. We shall, therefore, have to anticipate various points with respect to being, relation, necessity and difference which will be considered more at length when these subjects are examined. It is hoped that any fundamental points which are wanting here will there be found present. Let it be said at this point, however, that by the domain of being all those things are referred to

which possess being in any sense whatsoever whether they are actually existent or not.

4. The domain of being involves a network of relations of different kinds. Rather, it may be said, that it comprehends various networks of different kinds of relations all of which, however, coalesce in a general system. By way of illustration: in an arid country irrigation involves a set of legal relations, a set of biological relations, a set of physical relations and various other sets of relations. They all coalesce, however, in the relations involved in the facts of irrigation. Likewise among the relations in the domain of being there are some in various systems which have like characteristics and hold these characteristics in common. Among these characteristics there is one which at present particularly concerns us: the characteristic of necessary coherence. Those relations which possess this characteristic we shall call logical relations in being. As an instance of this kind of relation we may cite the relation between a linear equation and its graphical expression i.e. a straight line. It follows from the nature of an equation of degree one that it can represent, in Euclidean space, a straight line and only a straight line. The one is connected with the other in a precise way and necessarily in that way. Now as all things enter into logical relations we have a logical order of being. Of this we shall subsequently have more to say.

5. Having indicated, then, what we mean by the logical order of being we next have to ask what constitutes the logical order of words, since formal logic is nothing more nor less than the determination of this order. If we take away language we do not take away the logical order of being but we do take away formal logic. Again if we consider language only in itself apart from its content in being we have no basis for the determination of any order in words whatsoever.

6. Words, however, are instruments and imply a user as well as a content; in fact the content is only content for that user. If words are to have a logical order it will be not logical order *per se* but logical order for that user. Here we are brought to the question: what is the logical order of words (symbols) for any user. In answer to this question we propound the fol-

lowing definition: the logical order of words for any user is that order which most adequately suggests the logical relations of being. The primary point here lies in the word *suggests*. If the order of words for their user does not evoke awareness of (i.e. suggest) logical relations in being it is, *for him*, not the logical order of words. This order is dependent on *his* nature; as men differ in nature they may need different word-orders for suggestion of the same relations. Therefore what is logical order for one person is not necessarily so for another. Logic like grammar is not absolute but relative to the employer of words. He who seeks an absolute logic will have to consider language apart from the speaker or hearer but as such it is not language. The logical character of linguistic construction depends on the ontological suggestibility of that construction and the problem of the logician is not to find an absolute logic independent of those who use it but to find out what kind of order possesses this suggestibility in maximum degree.

7. The question now arises: why are there not as many logics as there are individuals, and the answer is that, in a special sense, there are. Everyone finds certain forms revealing and others not and frequently the same form which is transparent to one is opaque to another. In so far as organisms are heterogeneous the character of expressions which are suggestive to them is dissimilar and types of expression which evoke the cognition of logical relations vary. If all organisms were essentially different each would have its private logic in so far as it had any; the problem of a uniform logic would be insoluble. But since humans, much as they differ in accidental qualities, are essentially homogeneous in character, the same word-forms tend to have the same logical force and a general logic is possible.

8. The suggestion of logical relations in being by means of words constitutes inference and the forms of inference are the forms of logic. If these forms are finite in number no one has yet been able to tell what that number is. The combination of propositions which make up inference may involve very complex forms. If we let the number of kinds of propositions determinative of the premises of an inference used in a logic, be represented by p , and let the number of propositions in an

inference be represented by n , then (theorem of permutations involving repetitive elements) the number of possible moods (valid and invalid) will be:

$$p^n$$

9. Now if we let f equal the number of figures in which these moods can occur we get the formula for the total moods in all figures:

$$fp^n$$

If $f = p$, which is not necessary but may be true, then the formula becomes

$$n^{n+1}$$

and if $n = p$,

$$p^{p+1}$$

10. The first formula represents, in terms of the three elements, namely, the kinds of propositions, the number of propositions in an inference (including the conclusion) and the number of figures, the total number of moods, from which valid moods can be selected, for all possible logics.

11. It is evident that logics involving a minute classification of propositions and hence a large number of kinds of propositions will rapidly become highly complex and will pass outside the range of forms which can be suggestive to humans. The number of kinds of terms, propositions and figures employable in a logic, however, cannot be taken *ad libitum*. They must satisfy the conditions which the logic sets for itself in the way of axioms, postulates and definitions and these must include the principle of consistency. However, those conditions may vary and logics can be made just as complicated or as simple as you want them and yet be valid.

12. Now the number of rules for validity in logical inference is a mathematical function of the number of terms, figures and valid moods employed. As these increase the rules will quickly become abundant. Even with the simplest logic the rules require expertness in application: there is scarcely an exposition of logic extant which does not in some passage infringe the rules which it itself expounds. If these things happen with expert logicians what are we to expect if we double only, the number of rules now necessary.

13. The problem of logic, then, is not to find all forms of inference but to find those which are basically simplest. The question becomes: what is that logic below which you cannot go in the reduction of logical suggestion to linguistic inference. Barring immediate inference, this simplest form of inference is the composition of words containing three terms, two

CORRIGENDA

- Page 28, par. 9, *for* n^{n+1} , *read* p^{n+1} , *and for* p^{n+1} *read* n^{n+1} .
 Page 69, par. 16, line 2, *for*—its relation to what whole—, *read*—its relation to that whole—.
 Page 168, line 10, *for*—make up—, *read*—makes up—.
 Page 202, par. 51, line 7, *for* $A:B::2:1$, *read* $A:B::1:2$.
 Page 225, line 5, *for*—are infinite—, *read*—is infinite—.
 Page 238, line 2, *for*—multitudinous—, *read*—multitudinousness—.
 Page 275, line 8, *for*—in moment—, *read*—in a moment—.
 Page 357, line 9, *for*—or the rôle—, *read*—of the rôle—.
 Page 362, par. VII, line 11, *for*—for the most part, conjoined—, *read*—for the most part, are conjoined—.
 Page 372, par. 6, line 11, *for*—pain of sprained ankle—, *read*—pain of a sprained ankle—.
 Page 388, par. 14, line 17, *for*—the character of beauty i.e. any relation of relations possesses—, *read*—the character of beauty i.e. any relation of relations, possesses—.
 Page 425, line 13, *for*—of esthetic values—, *read*—of the esthetic values—.
 Page 483, par. 32, line 8, *for*—engaged in process—, *read*—engaged in a process—.
 Page 519, line 13, *for*—such a time as soul—, *read*—such a time as the soul—.

~~way, as a thesis against formal logic, is an ignominious~~

14. The purposes realized by logical form are several. It suggests to the user relations which he has not previously cognized. It awakens insights and intuitions and in its rôle in doing these things it may be called the logic of rational inference. It directs, moreover, the awareness to the relation of necessary coherence from which the conclusion of an inference derives its validity. In so doing it may be called the logic of

inference be represented by n , then (theorem of permutations involving repetitive elements) the number of possible moods (valid and invalid) will be:

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13. The problem of logic, then, is not to find all forms of inference but to find those which are basically simplest. The question becomes: what is that logic below which you cannot go in the reduction of logical suggestion to linguistic inference. Barring immediate inference, this simplest form of inference is the composition of words containing three terms, two premises and a conclusion, namely, the Aristotelian syllogism. There is a common prejudice that Aristotle denied the validity of any other sort of inference than that in the form of a syllogism. Advocates of this view will look in vain for any such claim in the *Analytics*. Aristotle was interested not in all possible logics but in that logic which is fundamentally simplest and from this comes his emphasis on the syllogism. Since Aristotle we have seen various attempts to substitute a so-called more complete logic for that of the *Analytics*. All these attempts employ a wider classification of propositions than that of Aristotle. Such, for example, are the endeavors which came to light as the quantification of the predicate and the numerically definite syllogism. The logics thus developed are valid enough but with the increased kinds of propositions comes an increased complication of valid moods and an increased flood of necessary rules, and these, together with little advance in serviceability. Hence with time they have fallen into abeyance. There is nothing absolute about Aristotelian logic but its simplicity; until someone can devise a simpler and more serviceable logic the assaults on it will not be effective. They may destroy interest in it; they will not substitute something better. Syllogistic logic like other things can be used in a trivial way or in a significant way and it is no fault of the logician, or of logic, if it is misused. The objection that it has been used in the former way, as a thesis against formal logic, is an *ignoratio elenchi*.

14. The purposes realized by logical form are several. It suggests to the user relations which he has not previously cognized. It awakens insights and intuitions and in its rôle in doing these things it may be called the logic of rational inference. It directs, moreover, the awareness to the relation of necessary coherence from which the conclusion of an inference derives its validity. In so doing it may be called the logic of

validation or demonstration. The cognition of such necessary coherence is, it is true, not obliged to issue from suggestion arising out of the logical order of words. However, where this relation is present, but not evident, it is rendered evident by reducing the expression of the thought involved to the form of demonstration. Demonstration, however, not only suggests the presence of the logical relation to the demonstrator but to others as well. Hence logical form is a means of communication. It fulfills, indeed, the conditions of adequate communication better than any other linguistic form for it is precise in its suggestion and by precision of suggestion alone can adequate communication occur.

THE LAWS OF THOUGHT

1. The first thing we have to ask with respect to the laws of thought is: in what sense are they laws. Laws are expressions of relations e.g. $pv = k$. When the relations are invariable the law is called complete. It can be expressed unconditionally in a universal affirmation proposition. When they are not invariable but occur for the most part they are partial and are accompanied by exceptions. They are generalities which strictly speaking are not laws.

2. Again laws are positive or negative; positive laws affirming a relation, negative laws denying the possibility of specified relations or apparent relations. It is obvious that negative laws are infinite in number since there are as many of them as there are true universal negative propositions. Hence selection and emphasis of certain negative laws is made not because they are any truer than other negative laws but because humans are prone to ignore them. Every positive law can, by obversion, be given a negative expression. The converse of this, however, is not true, namely, that every negative law can be given affirmative expression. The proposition: no numbers are both odd and even, cannot be changed to: all numbers are either odd or even. Not-odd, unless otherwise defined, may include other categories than even.

3. Lastly laws are classifiable as ultimate or derived. Ultimate laws are taken axiomatically and not considered as deducible from other laws; derived laws are laws which follow if ultimate laws are given. Derived and ultimate laws are reciprocal if either may be deduced from the other granted that either is initially posited. They are not reciprocal if a necessary retro-inference cannot be made from the derived to the original in ultimate laws.

4. Laws we have said express relations. This applies also to the laws of thought in so far as they are laws. It is evident with respect to Excluded Middle and Contradiction. The rela-

tion involved is that between an item and its other e.g. between A and not-A. But with regard to Identity the relation is not clear. To say that A is A ostensibly expresses a relation between A and itself, but a relation involves two or more terms and where the terms are one and the same there is no relation. An item cannot be related to itself except by figure of speech. Relation implies difference and where difference is absent relation is absent. The term A can only be related to itself by taking two aspects of A and relating them. The law of identity is, strictly speaking, not a law but a verbal convenience for expressing the fact that two words may have the same content. The relation is one of word and reference, not one of content and content. If the *is* in A is A is copulative the apparent proposition is merely a compound name for A. If it is existential e.g. as in the expression: what is, is, then it merely states that something is—not specifying any relation.

5. Of the remaining two laws both are invariable and one is positive and the other negative, namely, the law of contradiction. When we come to examine, however, the question as to whether they are both ultimate or whether one of them is derived we see that since all deduction requires the law of contradiction this law must be presupposed before any inference can be drawn. Hence the law of contradiction is ultimate; if the other law can be deduced it would have to be deduced from it; the law of contradiction, however, can be deduced from no higher source without assuming it in the deduction.

6. This might seem to leave Excluded Middle in the status of a derived law. Such however is not the case. The law of excluded middle is no other than an affirmative expression of the law of contradiction. The latter is stated as a negative law. A cannot be both A and not-A; contradictory propositions cannot both be true. But since A and not-A are contradictories and not contraries, A must be either A or not-A, which is the law of excluded middle. This is no proof, however, and if offered as such would be a *petitio principii*, the term *contradictories* begging the question. Contradictories are assumed to exclude a middle otherwise the proposition does not follow. If A cannot be both A and not-A we may yet say: A is not A,

A is not not-A. In this case A would be something between A and not-A. The principle of contradiction could still hold, namely, if A were A it could not be not-A or if A were not-A it could not be A. Still the: neither A nor not-A, would not be excluded. Now this seems speciously possible but it is in fact defective. What is lacking is a definition of negation or of a negative term. A negative term is the terminus of a difference relation. It is all that which is different from A. But "that which is neither A nor not-A" is different from A, hence in fact is not-A. And here lies the root both of the law of contradiction and of excluded middle, namely, in the definition of negation. Given this definition we are given at once both the nature of contradiction and the exclusion of an intermediary between contradictories. Both of the laws in question are aspects of this definition. They are not laws which are deduced *from* the definition since in their deduction they themselves would be assumed; they are simply different expressions of the same relation of which the definition of negation is the definition.

7. The laws of thought possess their validity because they have their basis in being. They are primarily laws of being and secondarily laws of thought. Thought is about being and logic cannot begin at all without some explicit or suppressed assumptions about being. Most logics are so constructed that they lead up to a conception of being which was held at the outset. Hence different schools compile different logics which are made *ad hoc* i.e. with a preconceived theory of the nature of being. We have, for example, realist, nominalist and critical logics. A man sometimes wonders at the extraordinary realm of metaphysical relations which he is led into by pursuance of the processes of a given logic; he should remember, however, that the path he took into this region originally came out of it; he could get to the same locality by following it to its source as well as to its conclusion.

8. Since the laws of thought refer primarily to being they determine the conditions under which language can have con-

tent. The reference of language is the content it suggests. Language cannot suggest that which violates the laws of thought. Hence *if* language is to suggest anything it will do so most readily when it explicitly conforms to these laws. As a rule the logical suggestibility of language is reduced to nil when the laws of thought are infringed. This cannot, however, be asserted universally. Some expressions which taken literally are contradictory, suggest meanings which are not contradictory, or meanings which contradict their own purport i.e. the purport of the expressions. The commonest instance of this is the double negation. We may refer to the line quoted from Chaucer by Jespersen:

He nevere yet no vilyneye ne seyde,
In al his lyf unto no maner wight.*

The suggestion here is clear enough in spite of the contradictory expression: the sentence *states* the opposite of what the speaker means but *suggests* the thing that he means. But there is in truth no literal meaning † to words outside of that which they suggest. Hence the above quotation is valid both as language and as logic. For psychological reasons, however, the clear expression of logical relations in language requires composition which does not even appear to be incongruent with the laws of thought.

* *The Philosophy of Grammar*, Chap. XXIV, p. 331 (1924).

† Literal meaning is only the meaning suggested to those who construe words according to a different and presumably privileged content from that used by others who are said not to use the literal meaning. If by literal meaning is meant true meaning all meanings regardless of external form are literal which involve adequate communication i.e. equivalent suggestion.

CONTRADICTION

1. Contradiction consists in the negation of an affirmation or the affirmation of a negation. It is defined in terms of language since it is inexpressible in terms of being. The law of contradiction, however, is stated either in terms of being i.e. ontologically, or of words, i.e. logically. It can have this dual enunciation because it is a negative proposition. In the first instance it is expressed: a thing cannot both be and not be; in the second: opposite i.e. contradictory, propositions cannot both be true.*

2. Now we have seen that to say: a thing is, e.g. A is, is to say A, as a term, has referential content. The proposition: A cannot both be and not be, is equivalent to: the term A cannot both have and not have referential content. But if an expression has no content it is not a term. The statement of the law is thus convertible into: A is not both a term and not a term. This is the true logical import of the law of contradiction.

3. Since there is no contradiction in being, contradiction is confined to language. The name contradiction is well chosen since it indicates the nature of the thing, namely, an opposition of words. The statement of the law: no contradictions exist in being is merely one of an infinite number of universal negative propositions presentable as laws. One might as well say there are no atoms in the square root of two. But the present proposition has a special significance for humans, because of their proneness to ignore it.

4. The status of contradiction is determined by its relation to reality. It is non-indicative. Contradictory terms and proposi-

* We purposely omit such irrelevant and gratuitous phrases as "at the same time." Propositions are non-temporally compresent or they are never compresent. You cannot drag a proposition out of the past into the present and still have it a past proposition. Hence if propositions are contradictory they are compresent and if they are not compresent they are not contradictory. You cannot contradict a proposition if it does not exist.

tions taken together are void of referential content. Hence contradictions are, in fact, matters not even of language as we said before but of contentless expressions. If the question is asked: how, since contradictions do not exist, can they be spoken of, the answer is that contradictions do exist as objects of reference but their existence is confined to apparent language. The verbal compounds of which they consist may have, without leading to the awareness of anything, the power of neural stimulation and thus assume the appearance of language. And apparent language of this kind enters, albeit in a humble way, into the nexus of reality. But if the possession of referential content is signified by the term *having existence* they cannot be said to exist. The presence of contradiction is indeed a primary mark by which apparent is distinguished from real language. The locus and dwelling place of contradiction, the place where it can reside, as it were, without contradicting itself, is the domain of apparent language.

5. The rule of logic is therefore laid down that terms, propositions and discourse shall not be contradictory. The essence of the logical is consistency and consistency is the *sine qua non* of all logical processes. If a man nevertheless contends for the existence of contradiction in being his thesis can neither be demonstrated nor disproved since demonstration is *ipso facto* negated by the retraction of the law. But as soon as the proponent of contradiction advances a proposition in support of his position it is evident that he presupposes the opposite of that position i.e. he presupposes the law of contradiction, since otherwise the negative of what he says is as valid as its affirmation. When the contradiction thus committed is rendered manifest the position is generally relinquished. Those, however, who continue to maintain the argument assert that contradiction is either possible in general or that only certain particular contradictions are possible. The first of these positions is subject to the above criticism. The second is that virtually taken by those who endeavor to support the law empirically. They say that the law is universally valid until an exception shall be perceived and further that there is no a priori reason why an exception may not be perceived. But in asserting this or anything else they presuppose the a priori valid-

ity of the law.* The empirical defenders of the law of contradiction, for example J. S. Mill, have already fallen into a contradiction in their efforts to support it.

6. We have thus far in this essay designated the nature of contradiction as the assertion and denial of a content to an expression; and have seen that contradictions are non-referential with respect to reality, and hence that they exist only as pseudo-language. Finally it is to be noted that the whole problem of logical axioms is involved in the wider problem of the status of language employed as a means of thought and communication. Retract language and you retract the entire series of problems arising from its confrontation to reality. This dualism of language and reality, in so far as the latter is considered as a whole, is untenable. It merges into a higher unity which combines and sublates its coalescent elements. Language is not something outside of, but is integrated into the nexus of reality itself. The confrontation of the two is only a tentative standpoint didactically employed for a discussion of the conditions of logic and truth. It depends not on reality as a whole but on the relations of finite particulars. This relation is enunciable with special simplicity in the terminology of Spinoza: God in so far as he is considered in himself conceives things directly through their essences; in so far as he is considered as constituting the human mind he conceives them indirectly through representative expressions. He, therefore, comprehends symbols both as symbols and as things in their whole relation to being and things as immediately taken up in being and as objects of symbols.

* Otherwise the negative of what they assert is just as valid as the affirmative and there is no point in asserting it. In order to avoid this exigency they have to presuppose the law of contradiction.

AN APPRAISAL OF CONSISTENCY

1. Language has unlocked the world for man. It has brought with it, however, the strange opposition of expression and thing expressed, description and thing described and with these it has brought the oddity of contradiction. In consequence of language humans have the opportunity and the faculty for contradicting themselves. Such good use they have made of it that, with the cumulative mass of inherited inconsistencies and the sizable contributions of the present, they have succeeded in transfusing life with contradiction. Indeed it is the commonness of the characteristic which causes it to be passed unnoticed. Children, especially the younger ones, are not infrequently direct and clear headed logicians. When, however, they have observed contradiction after contradiction not only condoned as worthy of credit, but gravely ordained as factual truth, they, like others, become insensitive to the intellectual discrepancies of common opinion. In not a few instances they regard the contradictory as credible, the consistent as absurd. Thus logical acuity with many humans seems to vary in inverse proportion to age, experience and education. When they become thoroughly immersed in the common sense of their environing culture they fall into a logical somnolence which renders them insensitive to truths and values which are not included in the solemn nonsense which makes up a considerable part of tradition.

2. It is an important element in the function of philosophy to ferret out and reveal contradiction in common thought. A trained philosopher will detect a contradiction when it has barely crossed the horizon; hunt it down and expose it to the light of day. The master of this art, to whom we may all do homage, was Socrates. He radiated, by his critique of common notions, a salutary scepticism. He liberated the minds of men from the inconsequentialities of common thought and at the same time started forward a dialectic of logical investigation which has extended cumulatively down to the present time. Nothing, per-

haps, would have such a felicitous effect upon the life of humans as an intellectual transformation whereby they might discern the contradictions in their affairs. Prejudice would be less absolute, retrogressive conservatism less oppressive, a healthy scepticism would be more dominant and tolerance more cultivated. Appeal could be made to fact and to science where now it is made to authority. Plato, impressed as few others by the effect of such discernment on the attitude of men proposed nothing other than a reformation of the world by logic—a proposal perhaps naïve, perhaps quixotic, but for this none the less sound.

3. Contradictions in life are those between word and word, between word and act or in a qualified sense those between act and act e.g. when an act implies a general principle of conduct which is infringed by a subsequent act. Contradiction between word and act has two aspects. Action i.e. behavior may be implicit or explicit. Implicit behavior is predominantly emotion and, therefore, contradiction between word and act may be considered either as that between word and explicit act or word and emotion.

4. Again contradictions fall into the classes of simple and implicative. A simple contradiction is one in which the opposite elements are directly present, compared, and hence readily perceived to be contradictory. An implicative contradiction occurs where two or more propositions ostensibly harmonious lead by implication * to contradictory conclusions, irrespective of how remote these conclusions may be.

5. Having made these distinctions we next have to ask:

* Implication is a simple relation arising from the principle of non-contradiction. Given A, if A contradicts not-B it implies B i.e. if A then B; for if A contradicts not-B it excludes not-B but since there is no middle between B and not-B, if not-B is excluded, B is present. Inference is the discovery or manifestation of implication. The nature of implication has probably been known from time immemorial; it was certainly understood by Plato and Aristotle and the Greek mathematicians. There are some people, however, who busy themselves with logic—and there probably always will be—who commit the *petitio principii* of trying to prove that there is a principle involved in implication more fundamental than that of non-contradiction. The principle of implication is stated clearly: Diogenes Laertes (quoting from Crinis, *On the Art of Dialect*), VII, 73.

how far is consistency with respect to words among themselves, and with respect to words and behavior, to be set up as a value. Regarding consistency of word and word we may distinguish two types, namely, coextensive and temporal.

6. Coextensive consistency is present when all the propositions of a point of view which an individual may assent to at a given time, are, in their relations, non-contradictory. We shall not say on this account that they are all logically connected although to proceed somewhat in advance of our thesis we are inclined to the view that if they are true propositions they will participate, more or less proximately, in the same logico-ontological order. For the present, however, we shall consider consistency a positive term for the negative, non-contradictory. Coextensive consistency is equivalent to the simultaneous agreement of all the propositions in a universe of discourse.

7. Now in the endeavor towards consistency the fewer the propositions (i.e. the problems and conclusions) involved the easier, for reasons of memory and attention, the attainment of consistency. But likewise the fewer the propositions the more apparent and specious is the consistency attained. For unless the implications of the propositions are investigated—though simple contradiction may be observed and obviated—implicative contradiction is left quite undetected. From this comes the frequent but unwarranted sureness of specialists; they know the propositions of their specialty, not their implications.

8. Propositions, however, and problems are interrelated such that one presupposes or passes into another. Therefore valid coextensive consistency is not to be expected where but a few elements only of a field of research are considered. Indeed, it cannot even be moderately assured unless, as far as possible, not this or that problem, but the whole circle of coördinate problems is, in ensemble and in detail, considered. There is no such thing as a single and disconnected problem or proposition. Pluralistic as a man's cogitations may be the conclusion derived from them will be found, unless the principle of contradiction is denied, to be immersed in a nexus of enveloping relations.

9. A philosopher in his endeavors to obviate inconsistency—and anyone desiring to remove contradiction from his think-

ing must become a philosopher—is like a charioteer driving a huge formation of horses. He is, as it were, a charioteer of propositions. He endeavors to keep them in line and under control. But now on one side, now on the other, some of his horses strive ahead. He tries to bring the rest into line with the more advanced but when this adjustment has been attained other steeds in other parts of the line advance and a new adjustment has to be made. Gradually, after great care, infinite practice and continuous driving, the breaches in the line are lessened and the gaps are closed up, so that, in time, a discipline of order and a dexterity of control are gained, which if not perfect, represent in contrast to the chaos of the start, high value and worthy accomplishment. And as this constant readjustment toward consistency characterizes the thought of the individual as it moves towards a clarity of synthesis it also characterizes that of society as it moves in the history of philosophy towards a more integrated logical vision.

10. It is evident that in the foregoing we assume that a system of true propositions is consistent. Coextensive consistency is a *sine qua non* for veridical thought and inconsistency is a mark of defect. But considering these points, does it follow that we are to throw out, without further consideration, a set of propositions because they ostensibly contain an inconsistency? We cannot say that it does.

11. In the first place we can never be certain for a set of propositions that appear thoroughly consistent that we have not overlooked some point of contradiction. Needless to say the history of philosophy furnishes a sufficiency of examples. Scarcely any of the major systems do not fail at some point. An individual or a period, by the limitation of its particular nature, is often oblivious to inconsistencies clear enough to others. If these others have developed more thoroughly its implications, contradictions, hitherto invisible, may be revealed. When a system of any complexity is considered it is not possible to attain complete certainty that it does not at some point harbor a contradiction—first because of temporal vacillation in the content of words and secondly because the implication of the system would have to be exhausted and this is impossible.

12. But our question is pertinent to the case where contradiction does appear. Where this is the case immediate rejection would still not be imperative and might be unwarranted. It is not in all instances possible to affirm that contradiction may not, by subsequent thought, be resolved in such a way as to cause its elision. An example of this occurs in physics in the resolution of the apparently contradictory results of the Fizeau experiment on effect of media on the velocity of light and the Michelson-Morley experiment which was interpreted to indicate that the velocity of light was a constant. Such considerations show that the appearance of contradiction is not to be designated at once as an insuperable defect. An inconsistency unless simple and unresolvable is to be taken rather as a stimulus to further thought than as an apodictic indication of falsity.

13. We have not, however, here reached the conclusion of our subject. There is even something to be said in favor of the presence of contradiction.

A system of propositions may refer either to the realm of being as a whole or to parts of that realm. One part of that realm is the world of actuality. By actuality we refer to the aggregate of perceptible things. Referring to this world, a system of propositions, to be true, must be consistent, but a consistent system is not necessarily true. Now a consistent system if coherent i.e. if one proposition follows necessarily from another, is unalterable. It has to be taken as a structural whole i.e. accepted or rejected *in toto*. It is not probable, however, that any completely true system referring to actuality is reached. Hence it is improbable that any extant consistent-coherent system is valid. But an ostensibly non-consistent set of propositions may, while not wholly or adequately describing actuality, touch it at several points. It may not be *en bloc* true or false but may have a partial truth of correspondence in some details, a falsity in others. Therefore when strong empirical evidence is present to support each of two or more ostensibly inconsistent propositions it may be valid procedure to retain them on the grounds that the contradiction they constitute may subsequently prove to be resolvable, rather than to discard at once, either or both, because they are momentarily discordant. Such, for example, is

the opposition in physics between the wave and corpuscular theories of light. With respect to the sciences like physics whose subject-matter is actuality, the presence of contradiction is not to be looked upon as *eo ipso* invalidating; it is to be considered rather, in some instances, as consonant with the conditions and state of progress of the science. A closed system for natural science while it may be a condition of perfected cognition is empirically apt to be both precarious and misleading.

14. What applies to natural science in this respect applies, to a less extent, however, to philosophy as a whole. Complete knowledge is, without exception, consistent. But consistency of this nature is a goal rather than a point on the way. It is a *terminus ad quem* to which discursive thought is spurred on by the presence of its opposite. A premature consistency is as much an indication of error as certain kinds of inconsistency and it has the undesirable effect of rendering thought static by erecting the specious appearance of certainty. Knowledge is either complete or partial, finished or developing. But, as we have seen, implicative contradiction can reside in any restricted universe of propositions. Until that which is implicit is rendered explicit the absence of contradiction cannot be apodictically asserted. But it is the very nature of knowledge-in-development that there is an implicit realm beyond that which is manifest. Hence for such knowledge final consistency is not to be demanded, although the contradiction present must serve as a motivating force for the continued unfolding of the point of view and in no case be accepted as unresolvable.

TEMPORAL CONSISTENCY

1. Although coextensive and temporal consistency are distinguishable they are nevertheless complementary. Since it is unfortunately not possible to comprehend instantaneously a complete propositional order the cognition of such an order becomes a temporal process. During the process, if a valid result is to be attained, the propositions arrived at successively must be consistent. Hence the demand for coextensive consistency is also, in a measure, a demand for temporal consistency. If the latter were completely rejected the former for finite knowers would not be attainable.

2. Temporal consistency, however, in the development of thought is not exclusively a positive value. Given an initial position an individual, if thinking, tends to change his view progressively. Hence a later may contradict an earlier point of view. Indeed temporal consistency is frequently instead of a sign of intellection the melancholy evidence of intellectual stagnation. It is not necessary in this respect to point to overstrained conservatism in current opinion such as that evinced in the conflict between religion and science—it is only requisite to allude to the persistence of quite trivial superstitions preserved with ritualistic meticulousness in order to avoid a breach with the past. Examples of such are found in the advocates of literal adherence to religious or political texts. This type of consistency is generally the result not of logical clarity but of exaggerated obtuseness; were it based on the former there are sufficient contradictions in the texts themselves to exercise its faculty.

3. Our interest here, however, is in an appraisal of temporal consistency and inconsistency. We shall discuss the latter primarily since it most directly indicates the matter of our investigation.

4. Temporal inconsistency may be either partial or radical. If partial it involves a change of assent from one proposition in an implicative system founded on a set of basic premises, to

another. The propositions exchanged in this case are derivative not fundamental. The set of premises, i.e. the essential point of view remains the same. Radical inconsistency, on the other hand, involves not only a change of subordinate propositions but of fundamental premises. Whenever we change the ultimate theses of a point of view the change is radical; when we change its details the change is partial. An example of the former is the replacement of absolute physics by that of relative. An example of the latter is change from the theory of a circular to that of an elliptical orbit for an electron around a proton. In the latter case the fundamental nature of the theory remains the same i.e. with respect to the general structure of the atom; in the former the essential view is replaced by another.

5. Partial consistency temporally conditioned is unstable. It lasts as long as fact and principle support it and it is valid to the extent that it brings subsidiary theses into harmony with the fundamental point of view without conflict with experience. Beyond this it is retrogressive. Thought in its development involves partial inconsistency. Were it not for this element it would stand stock still and the intellectual horizon it produces remain fixed and limited. In the expansion of thought, however, this temporal inconsistency is not haphazard; it moves to progressively more extended unification. A point of view in its working out absorbs and assimilates other subordinate elements. It is continually reconstructing itself and rendering the manifold of fragmentary particulars coherent. Temporal is always converging towards coextensive, partial towards complete consistency. Before their juncture is attained, however, partial inconsistency is necessary.

6. The same is not true of radical consistency as considered over a period of time. This must remain constant. Its change does not involve a modification only but a leap from one set of premises to another e.g. the passage from Euclidean to non-Euclidean geometry in consequence of the relinquishment of the parallel postulate. A similar change occurs in the leap from commutative to non-commutative algebra. Such changes are discontinuous transitions from one system of postulates to another. But in the development of a comprehensive point of view there

has to be some temporal consistency or there can be no point of view at all. The fundamental premises in which this consistency lies are the fixed locus around which a more or less shifting order of subsidiary propositions moves. The logical capacity of the point of view is measured by its absorptive power for ingesting without conflict new subject matter. So, for example, Copernican astronomy or Darwinian evolution received into their folds extensive realms of previously scattered data. The greater systems of philosophy are inexhaustible in this absorptive power. They are, however, thought out and elaborated by a passage from hypothesis to hypothesis. It is in the throb of moving contradictions that the triumph and pathos of intellectual creation occurs. But while the periphery of a point of view is ever changing and shifting, the center remains constant. A certain element of temporal inconsistency is continually present. But this inconsistency is that of growth, not of chaos. The factor, moreover, which coördinates the frontier range of moving hypotheses, the advancing eyes of an expanding philosophy—which eliminates confusion from their interrelations and which organizes the processes of their growth into a cumulative development towards cognitional integration is the persistent core of fundamental premises which the philosophy contains.

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DIALECTIC

1. Dialectic is the movement of temporal towards co-extensive consistency. It is the process by which the elements of contradiction manifest or latent in a point of view are exposed and eliminated. Thus the point of view moves toward a more and more coherent whole. Commencing from the smallest beginning, dialectic, propelled by the motivating force of non-contradiction, ascends and widens to a point of view, each progressive step of which is logically ascertained and each advance of which is movement from appearance as a *terminus a quo* to reality as a *terminus ad quem*. The history of thought is a single dialectic on a large scale.

2. The process of dialectic is divided into two parts: the dialectic of scepticism and the dialectic of integration. The first consists in the detection of contradiction, the second in the resolution of contradiction. The first consists in the exposition of inconsistency and the second in the passage to a higher perspective.

3. Contradiction exists either internally to a proposition or term or in the relation of one proposition to another. The detection of the former type of contradiction consists of an analysis of the proposition into its predicative elements. E.g. if we take the proposition: the square root of zero is an even number, we may analyze the term constituting the subject. The square root of zero is a number which multiplied by itself equals zero which is contradictory. Or stated in another way the square root of zero is a number which when divided into zero equals the quotient. We leave it for the subtler logicians to demonstrate that the above collection of words produces a proposition i.e. a sentence which has reference. There may be some in the school which finds meanings in the following combinations of ink marks: a figure which is roundly square or squarely round, or, an inference which is logically illogical or illogically logical. If, however,

they do come from the school of the logically illogical we shall hardly find it apropos to make any logical objection.

4. The detection of the second type of contradiction consists in rendering explicit the implications of a proposition and comparing them with other true propositions or the implications of other true propositions. If we define, for example, a straight line in such a way that it forms a straight angle the proposition that the perpendicular bisector of the line is not the locus of all points equidistant from the extremities of the line, proves on explication to contradict our definition. It is thus by explication or deduction of the consequences of a proposition that its disagreement with other cognate propositions is rendered manifest. This explication requires a continual reorganization of terms and propositions which brings them into a more and more precise harmony. This leads us, however, to the second step in the dialectic process.

5. The dialectic, as we have said, which leads to the detection of contradiction may be called the dialectic of scepticism. It demonstrates the instability of a thesis and throws its advocates back onto suspended judgment. It is the dialectic of logical criticism and constitutes that element in the Socratic method which has to do with the elimination of double ignorance i.e. ignorance of ignorance. While its result is negative it is nevertheless of great value since it dispels the premature dogmatism which accepts, without testing, a proposition. In discussion, however, when this dialectic descends to verbalism (the picture of which is sharply drawn in the *Euthydemus* and in the *Gorgias*) it loses significance. But when it is employed to shake indolent minds out of the heavy dogmatism of current superstition it is invaluable. The world, if it cannot have a Socrates, can at least derive some benefit from a Voltaire.

6. The second step in the dialectic process is the resolution of contradiction. Purely verbal contradictions are not resolvable since the opposition which they contain is ultimate e.g. a four-cornered triangle. They are, however, not significant. Contradictions which require resolution are those in which the opposed concepts are taken to be valid either from empirical or rational considerations. They form a temporary antinomy. Two proposi-

tions or concepts neither of which can be relinquished and yet which appear to be mutually exclusive constitute an inconsistency which requires resolution.

7. The resolution of such contradiction occurs in two ways: (1) by the indication of a harmonizing distinction or (2) by the presentation of a concept which involves and renders consistent the apparent contradictories. The former may be called resolution by distinction; the latter resolution by sublation. We shall consider the former first.

8. A distinction by which contradictories are harmonized may be either one of kind or one of relation. Where the distinction is one of kind the resolution is effected by a more accurate statement of the situation in which the contradiction occurs. If, for example, it is stated that any two angles of a triangle are together less than two right angles, it may be objected that this does not apply to spherical triangles. If triangles, however, are divided into plane and spherical and further into plane Euclidean and plane non-Euclidean the proposition may be said to hold for all of the plane Euclidean triangles. In this case i.e. substituting the term, plane Euclidean triangle, for the word, triangle, in the proposition, the proposition ceases to contradict other true propositions about triangles. The distinction constitutes a new and more specific definition.

9. The second case of resolution by distinction involves a differentiation of relations. If it is said that a given direction is both up and down the contradiction is resolved by pointing out the relational distinction, namely, that it is up for one man and down for his antipodes. In other words the original proposition is an instance of the fallacy *a dicto secundum quid ad dictum simpliciter*. In this case a *secundum quid* which should be present is omitted. Such contradictions are most numerous and subtle. They are eliminated by indicating the appropriate distinction. Anyone, however, given to making general statements promiscuously is apt to fall into the ambiguity which they represent. Their elimination is highly desirable in practical life because the oversight of a distinction may produce disastrous results by effecting the misapplication of a general rule.

10. The methods of distinction in resolving contradiction

involve to some extent further analysis of the subject-matter and the erection of a new concept with clearer differentiations. This erection of a new inclusive concept is the general method of the resolution of contradiction. It may take place, as we have seen, by the introduction of new distinctions into old definitions or by re-definition and the formulation of a higher concept which absorbs the elements of the contradiction into a unity which absconds their discord. This constitutes resolution by sublation. Such a process takes place in all sciences and all thinking where the harmonization of incongruous propositions is requisite without at the same time shifting back to a radical scepticism. An illustration of the process is found in the concept of the infinitesimal in integral calculus. If we desire to find the area between two ordinates under a curve we cannot do so by the addition of determinate component rectangles since all such addition involves an error arising from the non-coincidence of the ends of the rectangles with the curve. On the other hand if we diminish the rectangles to lines we can never by the addition of lines attain any area at all. If the sectors, however, are reduced to elements of less than any assigned value they are still neither lines nor items of determinate size. The limit of their sum is the area under the curve. By means of them the area can be deduced and the opposition between line and a determinate area is sublated.

11. A further example of resolution by sublation may be taken from physics. The speed of light c is found to be a constant for all points of reference and yet by the addition theorem of velocities it should vary with the velocity of the observer. When, however, space-time itself is taken as relative and variable rather than absolute and uniform the constancy of the velocity of light becomes perfectly compatible with the variation in the velocity of other things in ratio with the speed of the observer. What at first appears a confrontation of irreconcilable propositions is now resolved into a perfectly consistent unity.

12. This method of sublation, in the resolution of contradictions, has given rise to some of the profoundest insights which men have attained. It has also, however, given rise to some merely fictitious solutions which have passed temporarily as valid. It is in these fictitious reconciliations that a danger in

the unfolding of a dialectic process lies. Fake syntheses are set up which allay the curiosity without solving the problem. Such, for example, was the attempt to resolve the realist-nominalist controversy by the so-called theory of conceptualism. This theory is a mere compromise pacifying contending parties without meeting the postulated difficulty. Universals or essences are not made more, but less, intelligible by being placed in the mind of God rather than in the world of things. If the nature of the universal constitutes a problem at all, it is just as much a problem whether it i.e. the universal, is in God's mind or anywhere else. Again, many of the solutions of Hegel, who made resolution by sublation an essential part of his method, are not tenable. If the reader has any doubt about this let him refer to McTaggart's "Commentary on Hegel's Logic." That scholar found the major part of Hegel's transitions to be logically invalid. When the reconciliation of contradictories by sublation is specious rather than real, when it is used to cover ignorance and effect the hasty but undue arrival at a conclusion, it falls into casuistry.

13. The dialectic of scepticism i.e. the detection of contradiction, and the dialectic of integration i.e. its resolution by distinction or by sublation, are complementary processes which coalesce into one fundamental method of elimination and discovery. The method may begin at any point in existence and ascend in an ever widening curve until it encircles the whole of being. As it passes from a restricted to a more enlarged field of reference it organizes, coördinates and unifies its subject-matter until finally it provides a point of vantage from which the aggregate of knowledge may be viewed as a systematic whole. It continually reveals contradiction and surmounts it by wider and wider conceptions, but in this process, while its scope is enlarging, there is a constantly more exact elucidation of particulars so that precision of detail is sharpened concomitantly with progress towards universality.

DEDUCTION

1. The final product of a dialectic process is a deductive order of propositions. It is desirable, therefore, to examine the nature of such an order. Propositions so related that they follow logically from one another i.e. that they cannot individually or collectively be retracted without involving a contradiction, constitute such an order. They *can* be so connected because the elements of their referential content are related in being by such an interdependence. The propositions regardless of their order in expression might, of course, suggest these logico-ontological relations but their suggestive value in this respect is greatly increased by being, in their expression, deductively related. When such is the case the necessity of their logical sequence reflects the necessity of their ontological sequence and the ground of all propositions which are not ultimate is rendered evident.

2. The essential point which we have to make here is that deduction is not concerned primarily with the source of propositions but with the logical relation of propositions. It is rather a method of composition than extraction. It is not the drawing out of all propositions in a system from a few original definitions, axioms and postulates; the production of a system, as it were, *ab ovo*. It does not consist, as is sometimes supposed, in taking a set of items out of some repository after the manner of the magicians who draw out a variety of things from an empty hat. To be sure the deductive process may lead to and suggest propositions not otherwise cognized but the essence of its nature is rather the unification, by demonstration of their logical coherence, of a number of otherwise disconnected propositions. It is a matter of indifference where the propositions came from; the significant point for deduction is that the propositions when discovered are shown to be connected with and part of a wider system of propositions. The discovery involved is not primarily of the proposition itself but of its implicative relation to other propositions and this is, in itself, a distinct type of discovery.

One might guess or dream, for example, that a constant e.g. a raised to the zero power equals one. In a sense he would be in possession of the proposition. If, however, he demonstrates that the proposition ensues from the law of exponents he would have revealed a deductive relation which would give the proposition a new and different status.

3. It follows from the nature of deduction that there is no essential conflict between deduction and experience. Propositions derived from experience are validly absorbed into a deductive order if they are shown to be logically dependent on that order. It is a childish idea that deductive thinking is obliged to work everything out of its initial axioms and that it is illegitimate if the source of its propositions is other than pure ratiocination. Such criticism, which is not infrequent, is simply the consequence of lack of acquaintance with logical method and of a superficial (and generally second-hand) knowledge of the great rationalist thinkers of the past. The thesis which these men maintained, that the universe of being has a logical structure and hence if finally expressed must be expressed in such a way that that structure is made evident, is an entirely different thesis from the mistaken notion that every proposition in a system of knowledge must be extracted a priori from some source independent of experience.* A study of the deductive sciences alone is sufficient to show the inapplicability of this latter view. Many of the theorems of geometry and in particular the famous one of the three, four, five triangle (namely, that it is a right triangle) were originally known by experience; subsequently they received logical validation by being incorporated into a coherent order of geometrical propositions.

4. When a proposition is demonstrated to be component in an order of true propositions it passes, to use the terms of Plato, from opinion to knowledge. It gains a fixed position; an orientation in relation to the rest of knowledge. For this end the manner in which acquaintance with the proposition was originally

* Some people, for example, think that the reality of the independent (cf. *Essay on Dependence*, Prop. XXXIII) is not evident unless this or that individual can draw everything else out of it by discursive inference. The criticism comes from a rather elementary jack-in-the-box notion of deduction the defective nature of which we believe requires no further exposition.

established is a matter of indifference. We may, indeed, have acquaintance by deduction e.g. $\sqrt{2}$, or acquaintance by experience. Deductive extraction or suggestion is not impossible but a deductive order may be arranged with but a small amount of acquaintance by deduction.

INDUCTION

1. Induction consists in the formation of general propositions from the observation of particulars. The first part of the process is the collection of data; the second the comparison of it for likeness and difference. Where a number of particulars are found to be alike in a given respect induction produces a universal affirmative proposition; where they are found to differ from all other particulars in a given respect it gives rise to a universal negative proposition. Thus by the comparison of particulars classes are distinguished and general propositions referring to the classes are discovered. The bases for the distinctions thus drawn are either objects or their relations. Particular objects are compared with particular objects and particular relations with particular relations. Where like qualities are perceived either in objects or relations, the objects or relations are classified accordingly: "irritability is a property of all living matter," is an example of an induction applying to the qualities of objects; "thunder is caused by lightning," is an example of an induction applying to a relation. The relation of cause and effect is, in fact, the primary relation aimed at in the use of induction. It is detected by the well-known methods of likeness, difference, likeness and difference used jointly, concomitant variations and residues, although these are not the only ways by which it may be discovered.

2. The question in which we are here interested, however, is: what is the scope and validity of the inductive method. We shall consider the latter item first.

3. Induction is a temporal process and therefore its data are becoming past data as soon as they are acquired. Generalizations from them do not refer to what actually is; they are rather uniformities of items which have previously, in some sense, existed. Hence the validity of an induction for the present or the future is, strictly speaking, never complete.

4. Again unless an induction includes every member of the

class to which it is applied it is invalid. But complete induction is only possible when all instances of the class are observed. This, however, in the vast majority of investigations is impossible. Complete observation of a class scarcely ever occurs except where the class is arbitrarily limited e.g. the class of all visible stars. From partial data, however, generalities can only be based on faith. To argue: some A is B, therefore all A is B; or the observed instances of A are B, therefore all A is B, involves an inductive leap; an assumption which includes within it greater or less probability. In so far as generalization is made by this inductive leap it is not strictly empirical i.e. recorded from experience.

5. A third factor which introduces an element of probability into induction lies in the nature of data. Observations do not quite coincide with one another. The finer the accuracy demanded the less possibility of getting perfect agreement of data. Hence the generalization resulting from the data amounts to a statistical average which while derived from experience only furnishes a kind of norm around which actual instances taken from experience fall as, for example, in case one were to endeavor to find the average height of the waves in the sea. The statistical average may in no case correspond exactly with observed data. Induction of this kind (and it is this kind of induction which constitutes the main body of scientific law) is not literally empirical.

6. It may finally be pointed out that the taking of statistics itself involves, in many cases, an element of supposition or inference which is not consistent with unmitigated empiricism. This occurs in the application of terms to particulars. It is assumed that because a given item has certain perceived qualities which mark off a species, it has other qualities characteristic of the species. Thus a forester counting the maple trees in an area assumes from their external appearance that they have the other qualities of a maple e.g. a certain percentage of sugar in their sap. In this way the great body of scientific data is collected. For many things it would be practically impossible to collect complete data on each item giving it full justification to appear in a

statistical class. But everything short of complete observation is non-empirical, inferential and deductive. Hence when a body of statistics is said to be taken from experience this is only partly true. It is, in reality, the consequence of both fact and inference and neither separately. In every tabulation of data there is an underlying element of assumption. While this may not vitiate the data it should be strictly observed that such data never involve merely, as is sometimes suggested, bare experience.

7. This leads us to the question of the status of complete or thoroughgoing empiricism, namely, that view which asserts: all true propositions are inductions from experience, or, no true propositions are not inductions from experience. By experience we here refer to sense perception.

8. There are certain observations to be made upon this view.

I. It is contradictory and involves a *petitio principii*. Experience presents itself, as it were, without comment. It does not indicate that there is, or that there is not, anything outside of itself. A strict appeal to experience does not furnish data about the non-experiential but gives mute facts and nothing else. The proposition, therefore, that all true propositions are inductions from experience is an assumption itself not derivable from experience. But this contradicts the thesis of complete empiricism and assumes something which according to that thesis should be verified i.e. perpetrates a *petitio principii*.

II. In order to affirm the thesis suggested a construction of experience is necessary. For only a construction of experience can show why other theses are necessarily false and why the thesis of empiricism is necessarily true granting that it is. But experience itself does not provide a construction of experience and any such construction which is presented must have non-empirical elements in it.

9. By a construction of experience we refer to an analysis of the factors in experience, their relations and functions, by which a reason is evoked to indicate why experience is what it is. Since

experience is something immediately apprehended its factual nature needs no interpretation in order to be cognized. But as soon as that factual nature is evaluated in terms of being i.e. as soon as it is given an ontological status, some kind of a construction is necessary. For the sake of example we may indicate two common types of such construction: that of common sense and that of physical science. They both distinguish the perceiver from the thing perceived but the one places all qualities perceived in the object itself, the other places some qualities, namely secondary qualities, in the nature of the perceiver. These two constructions of experience are only two of a great number of constructions offered in the history of thought. The fact is, however, that there are as many constructions of experience barring non-empirical considerations as can be formulated without disagreement with the data of perception. Experience itself never furnishes a criterion by which one of these can be preferred to the rest. As long as there is no discordance between construction and fact such a preference must issue from some other source than experience itself. Now questions as to the ontological status of the items of experience, namely, whether they are presentative or representative and if representative how far accurate and how far erroneous are questions which are asked and answered only in terms of some construction of experience. Indeed, in themselves apart from such a construction they have no meaning. Bare experience yields fact without interpretation. Facts can be amassed and classified indefinitely without revealing their fundamental status in being. They may be taken as ultimate realities or appearances beyond which reality lies; whichever way they are taken depends not on the facts themselves but the construction according to which they are considered. Thus an empiricism which denies any realities not in experience does so arbitrarily on a construction which it, in terms of its own theses, illegitimately (since non-empirical suppositions are involved) assumes.

10. The inductive method exclusively employed can give at most a description not a construction of experience. It is valid as a scientific method to obtain this result: it is invalid as an ontological method for distinguishing dependent from independ-

ent elements of being i.e. appearance from reality. Valuable, therefore, as empirical science is in material usefulness, it cannot in part or in whole be erected, without self-contradiction, into a fundamental philosophy.

LOGIC AND BELIEF

1. The question here is: what is the relation between contradiction and belief. All beliefs are propositions but the converse is not true, namely, that all propositions are beliefs. What, then, is it about a proposition which raises it, in comparison with other propositions, to the status of a belief? Is there any such thing as a feeling for truth? It is difficult to demonstrate that there is. If we take truth in the sense of correspondence can we have a feeling for a correspondence, especially when one of the terms may be inadequately known or unperceived? Beliefs, however, are held about things inadequately known or unperceived.

2. Belief does not reside in a proposition in its own nature but constitutes an affectional tone held toward the proposition. Hence, as all attractive or aversive tendencies, it has to do with two factors: muscular and visceral responses and the formation of habit which accompanies these responses i.e. the generation of habitual belief. When a proposition evokes belief it acts as a stimulus to release nervous energy. This nervous energy is turned into an affectional tone i.e. an attitude, and where this tone is pro i.e. towards the thing, the state is one of assent, when it is contra i.e. attack, defense or withdrawal, the state is one of dissent. The intensity of the belief varies with the intensity of the affectional tone and where this becomes great the belief passes into conviction and tends to become solidified by habit.

3. Assent and dissent are both forms of belief, the one positive and the other negative. The absence of affectional tone about a proposition brings with it the absence of assent or dissent. But since this is a rare psychological state the tendency in humans is continually to pass to either one or the other. Where, however, the response is divided so that there is a movement both towards assent and dissent the resultant fluctuational state is one of doubt and while the two tendencies neutralize one another doubt prevails. In this case belief is excluded and remains so until something causes either side to predominate. When the fluctuation of

assent and dissent vanishes however the affectional tone which arises is that of certainty and this increases in proportion as one side of the opposition becomes definitively suppressed.

4. Now in the light of these things we may consider certain cognate propositions about belief.

I. Belief in the form of assent may arise from contradictory propositions.

If those propositions set off the proper responses then belief is *ipso facto* existent for belief is nothing but the affectional attitude of advance or assent towards a proposition as a stimulus. The fact that a group of words is contradictory, hence apparent and without content, does not prevent it from being believed if it acts as a stimulus to evoke the necessary affectional response. That such actually occurs is shown by experience, since there are abundant instances in which humans not only assent to, but hold tenaciously contradictory theses. Some religions, indeed, advance belief in certain contradictions as a sign of faith. If the contradictory is absurd, then, it is clear that many assent to and believe the absurd.

To the belief in contradictory and therefore contentless expressions, however, there are certain qualifications. First when assent to an expression depends on its content and not its form it is withheld from contradictory expressions as such since they are without content. Or, again, if a non-contradictory content is assigned to a contradictory expression the assent is obviously not given to the expression in its literal form. Secondly, contradiction may be known to, or concealed from, the judging subject. In the latter case his assent is given to the expression either as a mechanical response or because he assigns a consistent meaning to it. In the former case, i.e. where the contradiction is known, doubt ensues because he is obliged to both assent and dissent to the same thing. The psychological obstruction to believing a contradiction when its nature as such is known lies in the impossibility of simultaneous and unqualified assent and dissent. As a consequence, while inconsistencies are extremely general in human thinking if they can be adequately exposed they tend to

be abandoned. The difficulty is not in dispelling them after they are revealed but in so expressing them that they become manifest.

II. The logical form of propositions does not necessarily induce belief.

Since belief is an affectional tone the logical form in which propositions are expressed is not effective in establishing belief unless it is psychologically effective in awakening that tone. Those who do not by nature or training respond to logical form are left unaffected in their assent and dissent by it. But since logical form is the clearest method of revealing consistency and inconsistency—in fact these characters are often not manifest until expression is reduced to logical form—that form tends to affect belief in so far as it aids in bringing about a cognition of the characters of consistency and inconsistency in propositions or their connections.

III. Belief is independent of the truth of the proposition believed.

A proposition is not believed because it is true but rather because it evokes certain responses. It is only when these responses are disciplined to conform to logical conditions that they are correlated with true propositions. When this is not the case the coincidence of beliefs with true propositions is a matter of chance. The influences which elicit beliefs may incidentally elicit true beliefs but there is no controlling factor, unless a sense for consistency is active, which directs belief towards true rather than false propositions. In the ordinary wear and tear of life untrue beliefs about practical affairs are generally corrected by experience but a considerable part of the beliefs of an individual lie outside the range of this environmental correction. Hence a method (which logic endeavors to furnish) is needed for ordering belief responses according to principles which exclude the acceptance of untested propositions. While logic and belief are

not universally conjoined with one another they are nevertheless conjoined to a certain extent. In proportion as the demand for evidence and consistency as necessary bases for belief becomes felt, the demand for a method of obtaining them becomes imperative.

ERROR

1. A person who is ignorant cannot err in respect to that of which he is ignorant. For as long as he is ignorant of something he can neither have beliefs nor make propositions about the thing. If in all senses he is unaware of the thing it is not possible that he can predicate attributes of it. Ignorance, therefore, is something distinct from error. It is the lack of any cognitional relation between a knower and an item. The knower can in no sense use the item as the subject of a proposition. If he can use it as such he is not entirely ignorant of it. There is nothing, however, that cannot in some manner be used as the subject of discourse if only in the meagre sense that it is an item of being. This includes not only being but also the predicates which the possession of being involves. Hence there is nothing of which an organism capable of knowledge is entirely ignorant. If ignorance could be complete, error would be absent—but absent in the same sense that it is absent from a stone. Since it cannot be complete there is nothing about which error cannot in some degree be perpetrated. The relation which error bears to ignorance, however, requires, in order to be rendered manifest, a further examination of the character of the latter.

2. A common form in which ignorance expresses itself is apparent language i.e. language which has no reference. Language we have seen is relative. It is apparent or real according to the individual employing it. When language is apparent for an individual, for that individual it is without content and involves no real predication. But error involves predication and therefore when incorporated into language must be so incorporated in language which has reference. Empty words are void of either truth or error. Words which can contain error must be capable of possessing some kind of content. That which is merely meaningless is not erroneous. The difference between ignorance and error corresponds to the difference between making no statement at all and making a misstatement. If we add a

column of figures and get the wrong total we get, nevertheless, the total of some set of figures although not the one we wanted. If we refrain from adding we get no sum at all—we have neither truth nor error about the sum in question but we are simply ignorant of it.

3. Since language is relative and has a psychological as well as a logical character, there is a diversity of reasons why linguistic expression may or may not possess a content. But the primary indication of non-reference in a term or proposition is self-contradiction. Those propositions which are internally contradictory lack content and when present indicate ignorance rather than error. The predication which they seem to effect is not genuine predication. If it is said: this number is odd and is perfectly divisible by two, the utterance as a whole is not error but nonsense. And so for other self-contradictions which are less evident.

4. Propositions containing self-contradictions, however, are sometimes given vague non-contradictory connotations. In this case the predication may be real though obfuscated by the literal verbalism. Since predication, however, is actually made, error becomes possible. Such error arises either from the inability of the speaker to apply words to things or from the limitations of language itself. It is owing to the representative character of language that a considerable body of error is possible. Words are counters which can be separated and combined mechanically irrespective of the relations of the things they represent. They may be conjoined in ways not consonant with their subject-matter and in this manner false predication is possible. If man were incapable of language he would no doubt be free from considerable error owing to the sheer lack of an instrument for producing it. His capacity, however, to perpetrate error, as compared to that of a languageless organism, is a mark of power.

5. Since an error always has some kind of meaning i.e. a proposition, even to be erroneous must have content, error involves a certain amount of knowledge. A perfectly ignorant being would be oblivious to error as well as to everything else and a perfectly omniscient being by definition would not be subject to error. Error lies between these states. It is only possible

where some knowledge is present but where that knowledge is partial. Such a condition depends on the relation of a proposition to its content.

6. Now if the content of a proposition is said to be known and yet the proposition is erroneous, the questions arise: what constitutes the nature of the error involved? Wherein lies the discrepancy which permits the proposition to retain its significant character and yet deprives it of the quality of truth? Consideration of this problem leads us to a definition of error. Error is the relation between a proposition and its content such that the content of the proposition does not coincide with the content attributed to it. In other words error consists in the transposition of an inapplicable for an applicable content. The term *inapplicable* here, however, involves a tautology if not rendered explicit. By *inapplicable* we mean disagreement between a content and the conditions laid down for it by the predicating person. If we say: whales are cold-blooded animals, the proposition has meaning but the whales referred to are not those found in the ocean. The latter, however, constitute the content attributed to the proposition. If we say: the satellites of Uranus do not revolve around the planet in retrograde direction, the proposition has content, but this content does not agree with the conditions implicitly required by the speaker, namely, that they shall be the satellites observed in the sky through a telescope.

7. Error, strictly speaking, is independent of the process by which it is obtained. It may be reached by valid as well as by invalid processes. From true premises, false conclusions cannot be drawn by logical processes of inference. But erroneous propositions are deducible from false premises by valid methods and, on the other hand, they are obtainable from true premises by invalid methods. The error involved does not consist in the defect in the reasoning but in the character of the resultant proposition.

8. Error is thus distinct from fallacy. The latter consists in a mistake in the technique of drawing conclusions. If we take the terms, scientists, European, statesmen, in syllogistic form, in

the mood I I I and employ the second figure we have three true propositions but if we consider the last proposition as a conclusion, we commit two fallacies, namely, that of particular premises and that of undistributed middle. The conclusion is not an error but the process of reaching it is fallacious. This process involves a latent falsity, however, namely, the suppressed assumption that the conclusion follows from the premises. But there is in truth no logical coherence between conclusion and premises. Thus while we distinguish fallacy from error it is true that in all fallacies there is an implied error affirming a relation, namely, that of implication between the propositions of the apparent inference, which relation does not exist. It follows that in single arguments while error is possible without fallacy, fallacy is never possible without error. This means that fallacies derive their character as fallacies from the nature of error rather than the reverse, namely, that error derives its nature from fallacy.

9. The error which arises from fallacy we shall call error of technique. It issues from defective methods of inference and refers to the relations which those methods illicitly affirm.

10. Our discussion up to this point has been preliminary to a more fundamental investigation. Its purpose has been to define the nature of error and draw the distinguishing lines between error and ignorance on the one hand and error and fallacy on the other. We are now prepared to approach the principle object of the discussion, namely, a study of the two primary kinds of error, namely, error of fact and error of propositional isolation—of implicational discontinuity. We shall call this for short the error of discontinuity. The former has to do with the status of a proposition relative to fact, the latter with its status relative to the setting of implied propositions in which it resides.

11. By a matter of fact we refer to a datum of sense perception. A proposition which denotes such a datum and predicates something about it is a factual proposition. When such a proposition is false it is an error of fact and our concern here is to examine wherein the falsity of such a proposition lies.

12. If we say that a bird, let us take a waxwing, has ten

primary feathers on its wing, we refer to something which on observation may prove to be a fact. If we take a particular waxwing and count the primaries we find that they amount to nine; the estimate is inaccurate by one count and the proposition affirming it is a factual error. However, in one sense, it is a perfectly true proposition: it refers to a bird with a certain number of primary feathers on its wing. But the identification of this bird with the factual bird is erroneous. The two birds simply do not coincide. It is in this manner that all errors of fact arise, i.e. as we have said, in the transposition of an inapplicable for an applicable content. In every case of fact the applicable content is a possible, the inapplicable an actual content. The error consists in the interchange of the two. The falsity, thus, of a factual error lies in the confusion of a possible with an actual content. It is here especially worthy of note that if it were not for the cognition of possibles factual error would be precluded. At the same time, however, our knowledge of actuality would be hopelessly restricted.

13. The prevalence of error of fact is easily accounted for by the circumstance that mortals are prone to belief. Until the possible is distinguished from the actual it is easily exchanged for such. Indeed the possible is frequently much more plausible than the actual. Hence the question of error may not be raised at all—a matter of fact seeming to be evident and not requiring investigation. Consider the surprise evinced by Galileo's experiment with falling bodies. Everyone thought that heavier fall quicker than lighter bodies. Only rigorous methods of scientific observation can gain any consistency in the discovery of fact and in ordinary life it is rarely true that inferences of common sense about particulars are not accepted instead of, and in opposition to, truly observed data. Error of fact, thus, is constituted by an illicit transposition of a possible for an actual content. Let us turn now to the second kind of error.

14. We shall now consider a more fundamental and philosophical species of error. The error we refer to is concerned with the extent of the content which is applied to a proposition. Such error we have called the error of discontinuity. It consists

in the consideration of a proposition apart from its implication, hence in the transposition of a narrower and inadequate for a wider and adequate content. The degree of the error varies according to the discrepancy between the two types of content.

15. An isolated proposition is a verbal phenomenon without ontological counterpart. It arises from a neglect, for the sake of fixation of attention and convenience of expression, of the logical continuity in which the thing, about which the proposition is made, has its being. Even a factual proposition about a singular thing does not have merely the fact for its content. It comprehends also the whole order of things in which the fact can exist. Anything, no matter how minute, involves and implies the universe of being. It has its existence as a part of a whole which cannot, with consistency, be rescinded from it.

16. But if an item is part of a whole its nature or essence contains in it its relation to what whole and cannot be understood in abstraction from this relation. A hand cannot be known, as such, apart from a body or a diameter apart from a circle. Now that is part of a whole which cannot be retracted without changing the nature of the whole. But every proposition is linked by logical necessity to its implication; it induces a contradiction if withdrawn from the thing which it implies. The proposition, if retracted, changes the character of the logical whole in which it exists and hence it is a part of that whole. If we assert that the sine squared of an angle plus the cosine squared equals one and at the same time deny that a triangle can have only one right angle we have vitiated the referential meaning of the original proposition. We have rendered it non-referential and apparent since the one proposition cannot retain validity without the other. If the first holds good then the second holds good and if the first does not hold good then neither does the second. In short there is an organic interdependence between the propositions in a system of implication.

17. This is further made clear by the consideration of the nature of a proposition. Every proposition is composed of terms and their relations. If we posit the terms but deny the universe of discourse to which they belong we are merely talking nonsense. If we predicate something of a physical object and never-

theless deny the realm of physical objects, we are in fact saying nothing. A proposition, therefore, cannot be detached from its implication. By *cannot*, of course, we mean, cannot without contradiction. The implication is a whole in which the proposition is a part. If it, i.e. the proposition, is considered separately this essential character of it is ignored. It follows that a proposition cannot, in itself alone, be true because, in itself alone, it is contradictory. It cannot correspond to anything and thus be rendered true because taken apart from its implication its terms are without content and there is nothing to which the relation of correspondence can be attached. If there is any doubt about this, endeavor to posit a term without positing the universe of discourse in which the term resides. In practice some at least of the implicative significance of a proposition is always recognized. But the error is not infrequently made of assuming that a fact can be stated wholly in itself because this tacit recognition of implicative significance is overlooked.

18. Since a proposition is intelligible only as an integral part of a whole, error accompanies the proposition in so far as it is not so considered i.e. in so far as its implication remains unknown. This error arises not from something positive but from a limitation of knowledge. It is distortion due to partial envisagement. It is neither ignorance nor knowledge, but, as we have said, something involving both i.e. inadequate knowledge.

19. Thus as the range of implication of a proposition is unrecognized inadequate knowledge of it prevails. Now the range of implication of a proposition is of two kinds: that which is immediate and that which is universal. The immediate range of implication is the universe of discourse into which the proposition falls, e.g. humans in the universe of mammals etc. But the immediate range of the proposition in turn leads to the whole order of being. This order is involved in any predication whatsoever and to it all propositions implicatively point. Since a finite being, however, cannot traverse this whole realm of ontological implication and since, furthermore, as we have elsewhere pointed out, the relation of truth itself is one which is ultimately absorbed in the nature of reality, some error is an ever present component in thinking. But this error is subject to

great variations of degree. There are vast differences in the extent of its scope for any given proposition relative to a knowing subject. This scope is determined by the extension of the point of view of the subject. The consideration of this thesis, however, leads us to an examination of a point which we originally proposed for analysis, namely, the relation of ignorance to error.

20. While it is true that complete ignorance would exclude error as well as knowledge it is also true that, given any knowledge at all, that knowledge is less adequate the greater the ignorance of the knowing subject. Owing to the concatenation of propositions in an implicative order the status of any individual proposition is determined by its relation to the whole and ignorance of part of that order vitiates knowledge of the rest. The relation, therefore, between ignorance and error is one of direct variation; the common identification of the two, though not quite accurate, receives some justification by its emphasis on their proportional compresence. They increase and decrease together and where ignorance is great such cognition as exists is fragmentary and inadequate. Cognition under these circumstances resembles the impressions of a landscape received on looking through narrow windows while one is ascending the spiral stairs of a mediæval tower. One gets a glimpse here and a glimpse there and infers from these the nature of the rest. When he reaches the top, and looks out over the landscape it has a singularly different aspect and the delineations cut out by the glimpses are hardly distinguishable owing to their fusion with the whole. In this way error varies with ignorance i.e. ignorance of the whole produces error about the part. It must be noted, however, that their rate of change is not quite uniform. Some knowledge is more fundamental than other knowledge, namely, the knowledge which is concerned with fundamental things e.g. primary categories. Knowledge which is concerned with these indicates if not the specific consequences, the spheres of implication of a proposition. Hence whereas universal knowledge is precluded from human cognition certain significant knowledge is attainable which, more than other kinds of knowledge, is operative in diminishing the error of inadequate

cognition. It is the object and the peculiar province of philosophy, in the subjects of logic and ontology, to attain such fundamental knowledge.

21. Furthermore, it is obvious that all specialism is, so far as adequate knowledge is concerned, even in the field of the specialty, incomplete. A physicist who is simply a physicist, a biologist who is simply a biologist, an artist who is simply an artist, can never reach the fundamental truths of his subject-matter. This subject-matter cannot be cut off from the rest of things without the perpetration of error. Error can never be eliminated either by universality of view or by specialism alone but only by the dialectic reciprocation of both.

22. The elimination of error is in fact a continuous resultant of the dialectic process. How that process proceeds in the resolution of contradiction we have already considered. There are in addition certain positive steps which, in its function of removing the error of discontinuity, it involves. These may be reduced to three: First the determination of the essence of the thing under consideration, i.e. the attainment of precision in the distinction of the thing from other things. Secondly, the expansion of the implication, ascending and descending, which the essence of the thing involves. And thirdly, the integration of this system of implication into a fundamental order which embraces all systems of implication. As these processes, viz., precision, expansion and integration advance, cognition passes from the fragmentary and erroneous to the articulated and adequate.

23. Now in this essay we have distinguished error into three species: error of technique or fallacy, error of logical discontinuity or propositional isolation and error of fact or non-correspondence of statement with data of experience. We now propose to say some things which will qualify some of the propositions that we have previously made about the nature of error. We propose to show, namely, that all three species of error are only variations of one form i.e. contradiction. All error is explicit or implied contradiction; contradiction, implicit or explicit, is the sole essence of error. This means that the apparent predication in a proposition which involves error, is, strictly taken, meaning-

less. It is without content for contradiction is the mark of non-reference. Such a proposition, however, is one which, although it lacks reference, can nevertheless, if it is applied to a congruent content, have meaning. However the meaning-import of erroneous propositions is a subject which we shall examine after we have considered further the essential nature of error. Let us turn, therefore, to the thesis that all error is contradiction, directing our attention successively to the three species into which error falls.

24. First, regarding errors of technique and errors of discontinuity: we have just indicated that these errors involve contradictions either in themselves or in their implications. It is not necessary then to reiterate these demonstrations and we shall consider these two types of error as accounted for. Secondly, regarding error of fact: if we show that this also is rooted in contradiction then we shall have demonstrated that all three species of error consist in contradiction. Now that error of fact is nothing other than contradiction is not, at first glance, obvious. It is not, however, beyond exposition although the exposition of it requires a precise and literal adherence to logical meanings.

25. When the property B is predicated of the particular object A and A does not have that property, then the proposition making that predication is an error of fact. E.g. if we say that Mars has seven moons, and it does not, then the proposition is an error. But, returning to the generalized form, A is the existential object referred to. And A is, in fact, not B. The proposition, therefore, says in total: the existential object which is not B is B i.e. A is both B and not B. This, however, is a contradiction and every error of fact takes this form. In using a term denoting an existential object it must denote the true object; e.g. if we say that John Smith has blue eyes when in fact he has brown eyes then whatever John Smith we are referring to in the predication it is not a brown-eyed John Smith. If, however, we say that this particular existential John Smith (namely, the one with brown eyes) has blue eyes then we are, in fact, saying that John Smith both has and has not blue eyes (since blue is not brown), or, in other words, the John Smith who has brown eyes has blue eyes. The fact that we do not know that John

Smith has brown eyes does not sublate the contradiction. Whether we know it or not we are predicating a quality of a brown-eyed John Smith. If we are not making such predication we are not talking about John Smith at all. Now the principle of contradictory predication indicated in this illustration applies to all erroneous predicates applicable to John Smith or any other particular object. If, in short, we are not making true predicates about an existential thing, then we are not making any predicates at all about that thing and it is precisely for this reason that the predication which we do make is called erroneous.

26. Now existent things are particulars (Essay on Existence, par. 2). Particulars, however, involve an infinite series of differentiations which constitute their particularity. If we talk about a particular we either refer to this series or else we do not refer to the particular at all. Hence if we make a particular the subject of a predicate we do not refer to part of its differentiation and omit the rest; we refer to that particular particular i.e. to the whole differentiation which makes it that particular. Hence, in conclusion, it cannot be objected that in predicating B of A where A is a particular we mean by the term A only a part of the differentia which distinguish the particular item A, i.e. it cannot be objected, when we say John Smith (brown-eyed) has blue eyes, that we do not include brown-eyed under the meaning connected with the name John Smith. If we are talking about the particular existential John Smith then we refer to the complete differentiation which constitutes that particular. In predicating any other differentia of it, then, we are not, in fact, confining ourselves to the particular item indicated by the subject-term of the predication—this, however, is contradictory. Every error of fact, therefore, is such because it contradicts a true proposition (i.e. a proposition accurately expressing the fact) about the fact referred to, even though this contradiction is not evident. Or, in other words, every error of fact predicates contradictory properties about the same subject—which is what we set out to demonstrate.

27. Since, thus, the essence of the errors of technique and of discontinuity is contradiction, and in addition the essence of the error of fact is contradiction, the essence of all error is contra-

diction and every error is, in so far as it is an error, constituted by a contradiction.

28. But we have said that error involves meaning i.e. reference. Now we say that error is contradiction. But contradiction is the mark of apparent i.e. non-referential language. It follows that error as such is non-referential or meaningless. But this does not mean that an erroneous proposition taken in its proper reference does not have meaning. So taken, however, it is not erroneous. For example (to return to our previous illustration) if we say: Mars has seven moons, it is true that we can give the name Mars to some possible star and define it as having seven moons. The proposition so taken is true and its application regular. Only when we define Mars as that e.g. of our solar system, does the proposition become contradictory and false. To repeat, therefore, a proposition is not an error until it is applied to an incongruent content—it is not, so to speak, the proposition that is the error but the application of it to a content. This may be said in another way, namely, that error arises when the content of designation of a proposition does not coincide with the content of predication. But although the coincidence referred to does not exist, still *some* content of predication may be valid for the proposition, and applied to such content the so-called erroneous proposition ceases to be erroneous. The meaning, in short, of an erroneous proposition is the content to which it could be applied without contradiction. But in so far as the proposition is an error this obviously is not the content to which it *is* applied. If there is no such content then the so-called proposition is not a proposition at all—it has no reference. It is an instance rather of simple ignorance—and ignorance we have seen is not error. Error can arise only where a proposition which can have content is applied to a contradictory content i.e. to a content which contradicts the meaning to which it is consistently applicable.

TRUTH

1. It is, in considering truth, first of all desirable to recognize that we are dealing with a word. This fact bears a twofold significance. First, the word possesses an aura of emotional glamor and is hence employed independently of its meaning to evoke grandiloquence. Secondly, the question concerning the nature of truth is a question asking what kind of a content shall be applied to the word. When we ask: what is truth, we are, in other words, asking: what are we going to call truth. The point is not to find some detached thing to which the word luckily applies but rather to determine a content for it which can be consistently used. If it is objected that the question: what is truth, asks what is generally referred to when that word is used, it is answerable with the observation open to any one who will consider the matter, that the word is used in common speech in a variety of ways and with little regularity of meaning. Any of the reflective views of truth conflict at some point with common usage because of the amorphous and proteanlike character of that usage.

2. In our investigation, therefore, we shall first make some distinctions and then proceed to an exposition of a content for the word. It is essential at the outset to consider the difference between truth and reality.

3. Reality is not to be confused with truth for truth only participates in reality as a relation and is not reality itself. This relation is complex; it involves as terms reality or some part of reality on the one hand and language together with a knower on the other. In reality taken as a whole, truth as an internal relation, is enveloped and we have merely reality without relation. Outside of reality nothing can be, and hence there is no relation between reality and something other than reality which can be called a relation of truth. It follows that wherever the truth relation is present reality is not taken as a whole. The truth relation then is a relation between one part of reality and another which disappears when this dichotomy is sublated. Truth is consequent upon finitude. It is a relation dependent on the

division of reality into parts and the delimitation of those parts. It always implies some pluralism of outlook. It is only present where there is a finite knower.

4. All thoughts of such a knower, whether they actually are or not, can be expressed in propositions. This follows, as we shall later see, from the nature of language and the nature of being. We shall, henceforth, therefore, consider, for the sake of conciseness, all thoughts of a finite knower as propositions.

5. Now whatever else may be involved in the nature of truth we take one thing at least to be essential, namely, a relation between a proposition and some item of being. Our present concern, therefore, is to render explicit what the character of this relation is. We shall begin by considering the relation of correspondence.

6. A proposition corresponds to an item of being when its content of predication coincides with its content of designation. By content of predication we mean that to which the awareness of the knowing subject is directed by the proposition. If the latter has no content of predication it is not a valid proposition but, on the contrary, an instance of apparent language. Only valid propositions can be true. By content of designation we refer to any item of being characterized by the determinations, explicit or tacit, indicated by the subject of the proposition. Thus if we say that the star Sirius is a single star when in fact it is a binary the content of predication will be a star which is single, the content of designation, one which is double. It is implied in the term Sirius that the star designated is not any possible star but the visible one of that name. Hence the content of predication of the suggested proposition does not coincide with the content of designation involved in the conditions of the proposition, namely, the actual star. The proposition might, indeed, correspond to some fact, but it does not correspond to the fact required by its terms. It is, hence, erroneous. All forms of non-correspondence, as we have seen, involve such contradiction between content of predication and content of designation. Wherever non-correspondence of this nature is present, irrespective of what other characteristics the proposition has, it does not enter into the truth relation. On the other hand,

wherever correspondence is present the proposition is true. Before the significance of this affirmation can be made evident, however, an analysis of the necessary conditions for the presence and detection of correspondence between a proposition and an item of being is requisite.

7. Propositions refer either to particulars or universals. Particulars may be perceived or unperceived. Non-correspondence about perceived particulars when committed is recognized since both proposition and object are known. But concerning unperceived particulars the question arises how correspondence may be ascertained. For example, if we say: A is tall, and A happens to be present, the correspondence or non-correspondence of the proposition is obvious. If A is not present the correspondence cannot be ascertained and the proposition amounts to a prediction, namely, when A is perceived it will be evident that he is tall. Thus while unperceived particulars may or may not correspond to propositions made about them such propositions strictly speaking involve an element of uncertainty only to be removed by verification. Where such empirical verification is not possible the truth of the proposition is not ultimately ascertainable. Since, however, this is the case with all propositions about particulars which are not immediately present it is true of the greater body of propositions about particulars. With respect to past particulars, of course, verification except by the defective methods of memory and testimony is precluded.

8. The degree of exactitude moreover of a proposition may render the discovery of its correspondence with an object and the verification of this discovery difficult or impossible. We may say, for example, that the number of chromosomes in a human germ cell is forty-eight. The numerical reference in the proposition will correspond to the data. If, however, we go on to say that each chromosome is constituted of a given number of genes in a given order the probability of correspondence becomes less because the number of possible variations is enormously increased and the means of verification greatly reduced. Hence where microscopic exactitude is indicated in a proposition the possibility of the detection of the correspondence of that proposition with its indicated object is practically removed. The dif-

ficulty, however, does not obviate the nature of correspondence: while it may not be possible to show empirically the correspondence of a proposition with its object there is no a priori ground for denying the possibility of true but unverifiable propositions. Hence if A is tall the proposition asserting that, may correspond with the fact even though A is in another part of the world or, indeed, never is seen at all. In other words, where truth is identified with correspondence the truth of a proposition may be independent of its verification.

9. There is a theory, however, which posits two conditions, opposed to these, for the truth of a proposition. These conditions are (1) that the proposition shall be verifiable and (2) that it shall be effective in realizing a given end i.e. belief in it must be productive of desirable results; it must lead to control. Both conditions are really expressed in the latter. If, for example, belief in the proposition that the pasteurization of milk leads to good babies then the proposition stating that it does so is true. For if the proposition when accepted leads to the desired results this constitutes both its truth and its verification. The theory sees verification itself as a character of use.

10. Now it is interesting by examination of the presuppositions and implications of this view to see where it leads. It holds that no proposition is true which is not effective for a given end, presumably good. We shall use, to indicate this stipulation, merely the word effective. Thus if we have the proposition:

A is B (I)

that proposition is not true unless a second proposition is true, namely,

A is B, is an effective proposition (II)

The truth of proposition (I) is unconditionally dependent on the truth of proposition (II). Deny (II) and you deny the truth of (I).

11. What, however, constitutes the truth of (II)? Will it be a third proposition stating the effectiveness of (II)? If so that process can go on indefinitely. In order to have any truth at all it will be necessary to find some proposition which is finally effective or true in itself and on which the truth of antecedent

propositions depends. But there is, in fact, no need of going beyond proposition (II). If this proposition is true, (I) is true. How then is the effectiveness of (II) determinable? It is determinable simply and solely by examination of the facts to discover their correspondence or non-correspondence with the proposition; in the example given to see whether there is any correlation between the use of pasteurized milk and good babies. The truth of proposition (I) depends on the truth of proposition (II) but the truth of (II) is wholly a matter of correspondence with fact. Herein lies the essence of the truth of both propositions. This theory, therefore, which defines the truth of a proposition in terms of its effectiveness is, in truth, a disguised species of the correspondence theory. Its truth depends on the correspondence with fact possessed by propositions which assert the effectiveness of other propositions. Its basis is correspondence but it arbitrarily selects one class of correspondent propositions and attaches to them the appellation of truth. Why other propositions possessing correspondence are not also true is a closely guarded secret. Now it is far from the purpose of philosophical investigation to deny the delightfulness of human whimsicalities and this, it can hardly be denied, is one of the most delightful. It brings with it a certain lovable caprice which engages the heart of everyone. There seem to be, however, some things in logic which are worth observing. Hence it does not seem that the view is justified in making the selection of propositions which it proposes to call true, that it does, unless it discards correspondence as the distinguishing mark of truth. It cannot, however, as we have indicated, do this without forfeiting the standard by which it distinguishes the validity or invalidity of propositions which assert the effectiveness of other propositions. If effectiveness is the criterion of truth then some criterion of effectiveness is necessary and there is just a faint suggestion that any such criterion of effectiveness will presuppose a criterion of truth other than effectiveness itself, i.e. if true effectiveness is the thing to be discovered.

12. We have seen that a proposition cannot be disconnected from its nexus of implication without losing its content of ref-

erence. Without the latter, however, meaning is precluded for there are no terms between which the relation of correspondence can exist. There is a correlation, therefore, between the cognition of the implicative significance of a proposition and its validity as correspondent with a designated item of being. Now every particular is embraced in a universal which is its essence and every universal is such only in virtue of its position in an order of universals which it presupposes or implies. Any proposition itself can only be known in so far as this whole is known for without such knowledge the terms of the proposition themselves are inadequately cognized. A term to be known must be known in its setting of implication. For example, a horse is one thing to an Eskimo who has never seen one, another to a farmer who uses it as an instrument for attaining certain results, another to a biologist who considers its meaning as a special type of living organism and still another to a biologist who is also a logician and metaphysician who considers it not simply in terms of its biological relations but of its whole status in being. The same may be said of any particular item. A star is one thing for a city dweller, another for a shepherd, another for a navigator, another for an astronomer and this and something more for an ontologist. Now as the concept of an item becomes more complete the value of correspondence of propositions involving the concept becomes more adequate. Only when the concept has reached a final adjustment with respect to reality can the adequacy of the meaning involved in it become wholly complete. In other words the correspondence of a proposition is not one thing and its coherence with the whole another; they are one and the same thing. The notion that they differ arises from a lack of recognition that a proposition apart from its user is nothing. The concepts employed by this user and represented by the proposition in so far as they are restricted to a delimited sphere of being involve contradictions which make them inadequate expressions of anything. We arrive, therefore, at the proposition that meaning involves a coherent whole; that that which has meaning has it in terms of a whole of logical relations. Whether a proposition refers to an actual particular, to a conceivable particular, to a universal or to the relations between universals its

content includes the logical implications of the world in which those things can have being in the way in which they do have being. The particulars can only have qualities or perform actions within the conditions of the universe of implication in which they exist. The universals have their being in the same system of ontological coördination. Separate, isolate, detach these items from that which they involve and which they presuppose and the terms and propositions which are posited to stand for them shrink into empty forms. They become, in fact, errors; deviations from the universe of meaning. Coherence of implication and correspondence of reference are, in true propositions, identical. A proposition can only correspond to an item in an implicative whole. If the whole is inadequately known the item is inadequately known but then the correspondence is incomplete. Correspondence and coherence are not two attributes of truth in true propositions but are one and the same thing. In other words correspondence if it is complete—and unless it is complete it is not correspondence—is nothing other than the coherence of a proposition in a whole of meaning.

13. Now this identification of correspondence and coherence has certain consequences which we may proceed to examine.

I. The first of these is that the distinguishing mark of truth is simply meaning. Any proposition which has meaning i.e. which refers to something, is true; any which does not is error. The process of discovering truth is the process of distinguishing those propositions which mean something from those which do not. The difficulty of this is the difficulty of discovering—either through ratiocination or experience—what propositions have and what have not meaning. Errors seem to have meaning and the question arises why should this appearance of meaning exist—or, a little paradoxically, wherein lies the meaning of erroneous propositions. This, however, we have already seen. The apparent meaning lies in the content of predication which the proposition possesses. If an error contained merely content of predication it would not be an error. But it contains also a content of designa-

tion which contradicts the former content. This contradiction removes the meaning-import of the erroneous proposition as a whole. The elements of the error have meaning; the compounding of these elements in predication has none. The meaning of the elements gives the appearance of meaning to the whole.

II. A second consequence of the identification of correspondence and coherence is the recognition that error in itself contains nothing positive and hence is distinguished from truth by nothing positive. An error is not distinguished from truth as being another and opposed truth. It is not a meaning but the lack or absence of meaning. It is not, so to speak, an object into which one may collide but a gap into which one may fall. Error is not made error because of its content but because of its lack of content. It is bad description and hence, strictly speaking, no description at all.

III. A third consequence of the identity of correspondence and coherence in true propositions is that truth is the measure both of itself and error. In so far as a proposition has meaning it is true. The meaning of a proposition is the ontological content to which it refers. The cognition of this meaning is the immediate awareness of the truth of the proposition. There is no occasion for and no possibility of more fundamental demonstration. Every further attempt to render the truth of the proposition more evident appeals to less rather than more evident criteria. The way to demonstrate a theory is to make it clear i.e. logically clear. If this is done then no other demonstration is possible or necessary and if it cannot be done then no other sort of demonstration can be substituted for the one attempted. If the theory has meaning this meaning will constitute its truth. If a proposition or set of propositions *has* meaning this meaning will distinguish itself from non-meaning. The latter, in so far as it employs valid terms, will eventually run into contradiction and disclose its own lack of reference. True propositions constitute the coherent whole of meaning. Errors are not loose propositions somehow detached from this whole; they are not valid propositions at all. They have no reference. They involve, latently or obviously, vitiating inconsistencies which empty them of content.

14. Error cannot follow, moreover, as if it were true from the whole of meaning. It is, in this sense, disconnected from true propositions. But in another sense it is not so disconnected, namely, when error is considered as error. That any erroneous proposition is an error *does* follow from the whole of meaning since an error is what it is because of the nature of this whole. I.e. from the nature of truth the conditions which determine all possible errors to be errors follow. For example: it does not follow from the nature of a circle that it can be expressed by a linear equation. You cannot connect erroneous with true propositions by deductive relations. It does, however, follow that the proposition asserting that a circle can be so expressed is an error. The possibility—in fact, the necessity—of error as error follows from the nature of truth. Errors are extant items of apparent language and the error of erroneous propositions is a matter to be discovered just as the truth of true propositions. Both truth as truth and error as error imply, and follow from, the whole ontological unity which constitutes meaning. Where there is truth there is meaning; where there is error there is a conflict of meanings, which, owing to their contradiction when taken together, cancel one another; where there is ignorance there is no meaning at all. This means, finally, with respect to truth, that the content of every true proposition, taken in the totality of its implication, is the same as that of every other true proposition, namely, the whole realm of being. The reason and the only reason that there is a diversity of true propositions instead of simply one is the same as the reason that there are any propositions in a linguistic sense at all, namely, that the beings who use them are finite and limited; they are enveloped in an encompassing order of things with which they are connected in a number of ways, and among others, by cognitive relations—but cognitive relations which cannot be complete.

THE UNIVERSAL

1. It is the common fate of the universal to be misrepresented, and, on the basis of the misinterpretation, to be rejected. It is our object here to present an account so direct and clear that its being at least need involve no element of doubt. The problem, in this respect, is not so much to demonstrate a priori by discursive reasoning that the universal is real. It is rather to render it manifest, reveal it, establish a contemplative envisagement of it. Lacking this no proof can possess genuine content and with it mediate and discursive proofs become supplementary. The cognition of the universal is, like the understanding of a mathematical relation, an insight that can be suggested rather than a belief that can be coerced.

2. Progress towards such a cognition involves an advance in apprehension from content towards form, a discernment of what part of a thing may be changed without changing its nature and what may not. Form, however, is of several kinds, the simplest of which since it is apparent to the senses, is physical form e.g. shape. Though an integral part of a perceived object, physical form may be considered separately from the object as a whole. The form of an apple may be distinguished from its other qualities; the profile of a face may be considered apart from the rest of the face. Now this elementary distinction of form and content is important for it clears the way for two significant thoughts which will later become manifest, namely, (1) that the nature of a thing is determined by the form which it assimilates, and (2) that the being of a thing is constituted wholly by form, i.e. content resolves itself into form. The content of one form is the form of a subordinate content and so on indefinitely. Content becomes a term used to designate the relations of the formal elements constituting the thing. Nothing makes this conception so clear as the mathematical description of an object. For this reason mathematics is especially valuable in leading to an understanding of the universal.

3. We are here, however, concerned not with physical but with logical form. The universal is the logical form of an item. By logical form we mean simply that form which is represented by the definition or formula of the thing. Such a form is also called the essence of the thing for it determines its being in so far as it is a determinate thing. The essence of a thing i.e. that item for which the definition is the logical expression, is the character to which the thing must agree if it is to possess a given nature. There is nothing recondite, esoteric or mysterious about it.

4. Let us proceed for illustration to a realm where formulae are prevalent, namely, chemistry. We there find the formula for common salt; NaCl . Assuming this formula to be valid i.e. barring demurrers on the basis of the criteria of scientific validity, we can say that the formula itself—not the syllables but the form for which they stand—is something different from the pieces of salt subsumed under it. The formula not only tells what the individual pieces of salt are but what it is to be salt. Now the latter, namely, what it is to be salt, is always the same regardless of whether or not any actual pieces of salt exist. Thus the formula does not cease to be if all pieces of salt should cease to be i.e. cease to be actual. The importance of this observation lies in the fact that it emphasizes the difference between the specific instances of a thing (pieces of salt) and the logical form with which they concord (universal). We have, in short, two fundamental categories which coalesce in any existing item, namely, the formula, logical form, universal, on the one hand, and the instance of the formula, the unique thing, the particular on the other.

5. We thus see that the formula or definition of a thing does not refer to the particular but to the form with which the particular agrees. The definition of a triangle expresses the nature to which a triangle must conform to be a triangle; that of a circle, the nature to which a circle must conform to be a circle and so on for everything. Now it is readily seen that this nature to which a thing must conform in order to be a determinate item e.g. a triangle or circle, is something constant. It persists unaltered regardless of whether there exist in the actual world i.e.

the world of perceived objects, any instances of it or not and regardless of how many there do exist. Therefore we can say that the essence of a thing (i.e. its universal) does not contain within it the implication of any finite number of instances of that thing. For example we may define the essence of a circle (assuming the center at the origin) by the equation: $x^2 + y^2 = r^2$. This equation does not limit the number of possible circles to ten or twenty or any finite number. On the contrary given the universal i.e. the equation, there is no limit to the number of possible particular instances which follow from it. Any real numbers can be substituted for the independent variable in the above definition and serve to determine individual circles. But whether this is done or not the equation remains constant. Thus it is seen that the coming and going of particular instances of a universal does not affect the constant being of the universal. If we destroy a visible circle we do not destroy what it is to be a circle, if we destroy a tree we do not destroy what it is to be a tree, if we destroy a book we do not destroy what it is to be a book. Universals remain invariable. They are the fixed stars in the world of being.

6. We have so far indicated the universal as the logical form in which particulars participate. We may see further into the nature of this form by studying the distinction between essential and unessential qualities. If we take an object of definite character and successively retract its qualities we finally encroach upon those qualities necessary to the preservation of that character. In this case the object ceases to be an instance of the universal employed to characterize it. If we take a white cube, paint it, remove its whiteness, it still remains a cube. If we change all its dimensions by a half it still remains a cube. If we bisect it, however, we have by removing the equality of its sides retracted from it a quality necessary to its nature as a cube. The object in short ceases to be a cube owing to the loss of a quality essential to the character of the latter. While the object, however, ceases to retain its nature as a cube the nature or essence of cubicalness is in no sense affected. Any object made into a cube has to assume certain qualities essential to the nature of that form. This nexus of essential qualities constitutes a permanent condition to which

all instances of the universal consisting of those essential qualities must conform. Universals are therefore definite, close-at-hand and commonplace items involved in all the events of life and language.

7. So much for the nature and being of the universal. It is an item of such great simplicity that it is frequently overlooked and we are now interested to inquire into the reasons for this oversight. There is one very profound reason why individuals of a certain psychological constitution do not and never shall see the nature of the universal. This is, namely, that it is not pictureable. Its cognition is a matter of seeing logical conditions and relations. Like those who can study indefinitely the demonstrations of geometry without gaining an insight into their gist there are people who, because they cannot put the universal down in the form of an imaginary picture, forego any adequate cognition of it. Hence has arisen a series of pseudo-universals, of misinterpretations, the refutations of which have erroneously been taken to apply to the logical universal. These pseudo-universals are called variously, the representative image, the composite picture, the generalization, the average.

8. The representative image is a hypothetical image to which all the particulars of a given class are supposed to correspond; an image of a triangle for example which embraces all the forms of the triangle: scalene, isosceles, equilateral. The discovery that such an image does not exist requires no great acumen. Hence the compromise was proposed to let one particular triangle stand as a symbol for the whole of the class. Such symbolism, useful as a psychological convenience, involves nothing impossible. But the representative particular thus chosen can no more be identified with the universal than any other particular. The compromise, so far as the elucidation of the meaning of the universal is concerned, is no better than the original error. No image at all of a triangle, or of whatever the subject at hand may be, constitutes the nature of a universal. This nature is exclusively logical form and not subject to any kind of pictureability in terms of the senses.

9. This criticism holds also for the rudimentary view which conceives of the universal as a composite picture. By a composite

picture is meant an image composed by the fusion through superimposition of a number of single images. The effect produced is believed to resemble the blending into one image of a number of like, but not identical photographs. Granting for the sake of discussion the existence of a composite image it is still no more universal in its nature than any picture of a particular. It is a cognate concept to that of "the average."

10. The average is the generalized thought for the quantity or intensity of a character in a group when that character is considered as equally distributed over the number of items included in the computation. But neither the composite image nor the average are constitutive of the essence of a thing or class of things any more than the composite picture of so many lumps of salt would be constitutive of the formula NaCl . If any further explanation on this point is desired the reader is referred to Spinoza's *Ethics*: Scholium I, Proposition XI, Book II, where the matter is revealed with a clarity which leaves nothing to be desired and renders additional exposition superfluous.

THE UNIVERSAL AND ITS RELATIONS

1. We have here to consider two orders of relation into which the universal enters: that between particular and universal and that between universal and universal.

2. By a particular we refer to a singular item not predicable of any other item. The distinguishing marks of a particular are uniqueness, finiteness, and adjectival inapplicability. By the last qualification we mean that the particular, although it may be described by adjectives, cannot itself be designated as the adjective or quality of any other thing. Particulars are, moreover, divisible into two classes a recognition of which contributes to the understanding of their nature. The division to which we refer is that between the perceived and the unperceived. Any object cognized by the senses is a particular object e.g. a particular man, Socrates. There is, however, an unlimited realm of particulars not so perceived. Some of these may be imagined e.g. Falstaff, others are neither perceived nor imagined. The total realm of particulars is thus considerably wider than that of perceived particulars; visibility or perceptibility cannot be included among the necessary marks of a particular. While the proposition: all things perceived are particulars, is true, its converse is not true.

3. The cognition of particulars, however, is a subject which we shall consider at another time. At present we are interested in certain propositions concerning their relations to universals.

I. Every particular is an instance of a universal.

Assume that there is a particular which is not an instance of a universal: then it possesses only unessential and no essential qualities. But this is impossible because it would be a particular in general without being any particular thing. If it were a particular thing it would have the essential qualities of that thing.

Further, particularity itself is a logical form i.e. a universal.

But if an item considered as a particular is not considered also as participating in this universal it is considered both as particular and not particular which is contradictory. Therefore every particular is an instance of a universal.

II. Particulars differ.

This proposition is obvious. No two particulars can be in every respect alike. If so they would lose their uniqueness and coalesce into one item.

But the question arises: how can particulars be subject to the same universal and yet differ among themselves? The difference lies in their accidental qualities. Two circles are both circles yet may be different with respect to their dimensions and relations. The point is shown most clearly in another way i.e. in differentiation. The derivative of a function is a universal governing the rate of change of that function e.g. if $y = x^2$, $\frac{dy}{dx} = 2x$. $2x$ equals the slope of the curve at any point. Each point, however, on the curve may have a different slope. The slope at each point nevertheless adheres to the same formula although it differs from the slope at every other point. In the same way the instances of a universal may all involve the same universal and yet differ individually.

III. The particular is dependent on the universal.

This is corollary to proposition I. Retract the universal and all particulars which it involves are retracted. E.g. define a circle in such a way and only in such a way that two circumferences must intersect at more than two points. (Such a procedure without qualification is untenable in reality but it illustrates the point.) Then both the definition of the Euclidean circle and all particular Euclidean circles would be sublated. No Euclidean circles can intersect at more than two points. The existence of the particular presupposes the being of the universal. If the universal is not, neither is the particular.

IV. The particular and universal are compresent.

This follows from the foregoing proposition. Wherever particulars exist they involve a universal.

V. The universal implies the being of an infinite number of particulars.

A universal has as many particular instances as there are possible differences among these instances. But these differences are infinite (cf. *Essay on Difference*, par. 11). Therefore the number of instances of any universal are infinite.

VI. The number of actual particulars of a universal is not determined by the universal itself.

Only those things follow from the nature of a universal which apply to the essential nature of the particular. Actual existence is not essential to particulars (unless so defined). Therefore the actual existence of any particulars or any definite number of particulars does not follow from the being of the universal. E.g. it does not follow from the nature of a triangle that there will be a thousand or ten thousand or any determinate number of actual triangles.

VII. The universal is invariable and is unaffected by changes in its actual particular instances.

The universal is the logical form to which a thing adheres in so far as it is a definite thing and has a definite nature. The change of a particular instance of a form in no way changes the form itself. Thus the universal is constant regardless of the variation of its instances.

4. The foregoing propositions describe the fundamental relations between the universal and its particular instances. Our

next concern applies to the relation in which a universal enters with other universals. This relation is one of implication. Every universal enters a complete system of implication with other universals. By implication we refer to a relation between two or more items such that the being of the one involves the being of the other. If A implies B then the presence of A without the presence of B is contradictory, hence impossible.

5. Now universals are expressed by definitions and when one definition involves the being of another the one implies the other. Such for example is the relation between the sine of an angle and the definition of a triangle. The sine of an angle is the ratio between the opposite leg and hypotenuse but these terms are unintelligible apart from the definition of a triangle. Thus the implicative connection between universals is represented by the logical relations between their definitions.

6. It is here strictly to be observed that the terms inclusion and exclusion are not used in describing the relation we are considering. These terms are conventionally employed to refer to the relation between genus and species. Genus and species, however, are not universals but numerical classes. They derive their meaning from the being of their cognate universals since the latter serve to characterize the particulars which make up the classes. But the universal itself is neither great nor small, in accordance as it contains more or less individuals. It is a single form and remains independent of the extension of the class derived from it. Hence the relation between genus and species—class and sub-class—which is either one of inclusion or exclusion remains foreign to the universal. It is, when applied to the latter, a kind of spatialization of that which cannot be spatialized, namely, logical relation.

7. The implication involved in the relation of a universal to other universals is of a dual nature. It embraces that which a given universal presupposes on the one hand and that which follows from it on the other. The former constitutes the pre-suppositions, the latter the consequences of the universal. The universal itself is a conjunction of these two lines of implication, the one ascending to necessary preconditions, the other descending to necessary results, including finally its particular instances.

As such it is a point of reference in a continuity of meaning. The two lines of implication coalescing in the universal constitute its whole meaning or implication. For example: the whole system of functions and their relations constituting the science of trigonometry are consequences of the nature of the triangle. The triangle, however, presupposes the geometry of lines and angles. The former is the descending, the latter the ascending nexus of implication.

8. Now of this implication which emanates from the universal the ascending trend leads to immediate presuppositions. It does not end its course in these, however, but goes on to other presuppositions till it traverses a whole logical structure leading to a terminus in ultimate and independent categories. Since each step, however, involves less of presupposition and more of consequence, there is, in this ascent, a constant growth of import, a progressive accumulation of meaning. This accumulation carried to its term embraces the whole of meaning. Thus diverse lines of implication return to the same source and from this source follows the infinite diversity of things. Every universal is a component in this unity of meaning. And since an infinity of particular instances follows from every universal (all particulars are dependent on, or consequences of, universals) the implication ascending from any particular likewise extends to the whole. In this unity of meaning there is a priority and subordination of universals, a gradient of dependence and a collocation of consequences into a rational order; a rational order which includes all items in the realm of being. That this truth is quite simple and that this rational order is easily comprehensible the reader may demonstrate for himself by taking any particular and inferring its presuppositions.

9. The understanding of these things prepares us to inquire, at this point, more closely into the relation between the two lines of implication which connect a universal with its presuppositions and consequences. These presuppositions and consequences converging towards an intermediate universal, coalesce, as we have seen, into one, and form a continuous cumulative process of meaning. But what we have called the consequences of a universal, namely, those things which follow from it, are, in a sense,

presuppositions of it as well. While they require the universal as a *sine qua non* for their being the universal implies them as necessary consequences. The retraction of either i.e. of either the universal or its consequences, entails the retraction of the other. Hence the consequences of a universal i.e. its nexus of descending implication, constitutes a part of the presuppositions of it as well. But its presuppositions since they are implied by the universal and involved in its being, are inferentially as much consequences as presuppositions. Thus, in reality, the distinction of presupposition and consequence disappears. There is coherence only. The distinction is revealed to be a convenience of point of view whereby the logical interdependence of items in the articulated whole of meaning is brought, for the finite knower, within the scope of cognition. All presuppositions are consequences and all consequences are presuppositions depending on the point of logical perspective from which they are considered. If we posit a universal we presuppose every necessary condition for the being of that universal and this involves (par. 3, Prop. V) every possible particular instance of it; if we posit a particular we presuppose every necessary condition for the being of that particular and this includes the universal of which it is an instance. The two are implicatively compresent.

10. We shall conclude with a relevant observation on human discovery. The most profound discovery that the human race has ever made, is, namely, that one thing follows from another—a discovery made, in the only real sense in which a discovery can be made, that is, with an illuminated wholeness of vision concerning the significance of the thing, by the race which produced a Plato, a Euclid and an Archimedes.

BEING

1. When we consider the differences between *a* being or *some* beings and being itself we recognize that being is a universal. It is not the so-called sum total of existent things but the logical form to which anything agrees in so far as it is a being. Whatever is, is an instance of being and nothing that is, is not an instance of being. By the term *is* here we refer to being absolutely, not to this or that type of being e.g. physical existence.

2. Now we have to consider two problems centering around the nature of being. First, what is the relation of being to its instances; and second, what is the relation of being to the whole of meaning, in one word, to reality.

3. The recognition of the uniqueness of being in comparison with other universals introduced a difficulty into its interpretation the attempted solution of which led the Eleatics to absolute monism. If we take two instances of a certain universal e.g. a horse and a man as instances of animal, we will find two sets of differences into which they enter. First each will differ as a particular instance from the universal. The difference here involves no difficulty. Secondly each differs from the other. The horse differs from the man by a series of qualities proper to it. The horse, however, is perfectly like the man in that he is an animal and the man the horse. In so far as they are both animals they are both alike. But in so far as each has peculiar qualities i.e. qualities in addition to those constituting animality, they differ. Now these added qualities are not essential to them as animals and in a certain sense, therefore, the horse and the man may be said to be perfectly alike in so far as they are instances of animal but to differ only in so far as they are other than animal. In other words the characters which make them differ are human on the one hand and equine on the other and these characters are not constituent of, but added to that of animality.

4. So far we shall raise no objection and we may apply these distinctions to any universal indifferently. The fact that instances

of it have other characters in addition is not incompatible with the participation of these instances in the given universal. But when we consider being a special difficulty arises.

5. If everything is an instance of being then all things in so far as they participate in being are alike and only as they have other characters than being i.e. non-being, are they different. Just as man and horse are alike in so far as they are animals but differ in so far as they have other characteristics, so two or more beings are alike in so far as they are beings and differ only in so far as they have characters other than being. But there is a special difficulty here with respect to being which is not present with respect to animal. Both animal and not-animal may be instances of being. But such is not true of being and not-being. Not-being can in no sense be an instance of being. Hence since all characters that things have other than being are not-being every difference from being is not being: the whole range of things is really one since all difference, hence all plurality, is not-being and the one being that is, is simply being.

6. Now according to this argument being could not have any instances: first because any instance of being would differ from being itself thus participating in not-being and secondly, in so far as particular instances differed among themselves they would differ by other characters than that of being. But there is no middle course between being and not-being, hence any thing other than being is not-being and they would differ only as they were constituted of not-being.

7. This theory sublates all difference from beings. It is confronted, however, by another thesis which derives difference itself from being. That is: being itself has characteristics, hence (1) implies difference (2) enters into not-being. The latter conclusion is obviously contradictory and therefore invalid. But if so then the former proposition must be interpreted in such a way as to permit the being of differences, i.e., of an infinity of qualities and relations not strictly identifiable with being *per se*.

8. Thus the difficulty in describing the relation between being and its instances is made more pronounced. A confrontation of arguments arises, the one deducing the not-being of different qualities from being itself, the other showing the necessity

of difference as a consequence of being. In other words the one asserts that differences cannot be, because they would be not-beings; the other asserts that differences must be because the nature of being itself implies them.

9. Now the basis for this antinomy lies in the type of interpretation given to being. To say that it is a universal is not sufficient. It is necessary to point out what kind of thing an instance of being must be and what conditions determine its status as such. Three views in this respect may be considered, namely, that being represents a substance, a quality or a relation.

10. If being is taken to be a kind of substance the difficulties we have indicated are unavoidable. If it is a substance (e.g. in the crudest forms it was identified with pure space) it is clear that anything not that substance, such as an attribute or relation or any other substance, is not-being. Any form whatsoever constituting a modification of the substance *being* other than the substance, is other than being and there is nothing other than being but not-being. Now these forms and qualities cannot be saved by asserting that they are, but are species of not-being. For that is simply making not-being into another species of being and in so doing reinvoking all the difficulties originally attaching to the problem. Hence if any intelligible meaning is to be given to difference, the conception of being as a substance has to be abandoned.

11. The same, however, applies to the interpretation of being as a quality. By a quality we refer to a discrete, intrinsic character of a thing like the greenness of a leaf. If being is such a quality it is clear that other qualities are not to be identified with that quality and not being so identified whatever else they may be, they fall short of being. Any one of them can no more be identified with being than the greenness of the leaf can be identified with its shape. If being is only one of the qualities constituting a thing then the other qualities are not-beings. But, it may be observed, they also participate in being and hence while any one of them is not the quality of being itself it is an instance of that quality, hence a being. The thing in this sense would be constituted of the quality of being and its other qualities which are also beings. This consideration, however, merely postpones

the difficulty by removing it one degree. The quality itself then takes the place of the original thing and it is pointed out that it likewise consists of being together with other qualities not identifiable with being. Now this regressus may be extended to any term indefinitely but still there will be a residual difference which cannot be brought under the caption of being. The limit of the series will be being itself but the series will never reach that limit. But assuming for the sake of the argument that it were reached, then all qualities would be reduced as before to plain being. There would in fact be no other quality than being and the argument would terminate in the position it set out to nullify. Thus the interpretation of being as an intrinsic quality leads to a logical impasse and is hardly more acceptable than its interpretation as a substance.

12. These difficulties have led to a rejection of the concept of being as having other than linguistic significance. Being is taken as an empty substantive constructed from active and passive forms of the verb *to be* on analogy of the word *walking* taken from the verb *to walk*. The verbal forms themselves are asserted to have value merely as time indicators and copulatives in conjoining subject and object. But this grammatical view of being finds itself too poor in content to be consistent and is always falling back on common usage to express things, which if taken strictly in its own terms, would be inexpressible. This is made evident when we consider the relation between words and reference. We say that a thing is, independently of whether there are any words for it or not. On the other hand if a thing in no sense is, words cannot call it into being. In short the content of grammatical expressions is made up by things that are and the being of the things cannot be put exclusively in the conjunction of words without at the same time rendering language defective as a means for expressing the nature of things.

13. Another endeavor to avoid the difficulties in the substantive and qualitative interpretations of being consists in the rejection of the category altogether. Things should not be referred to as being or not being. They should simply be designated in their characters as specific items. To say that a thing is a being or a not-being is from this position meaningless. There is no

question of the relation of particular beings to being since the terms used can be given no content.

14. This view, however, is not consistently tenable because the concept of being is too necessary and too convenient to be relinquished. It indicates something which is requisite to the description of things and the absence of which makes the discussion of certain fundamental problems impossible. When men come to examine the nature of error they distinguish between propositions about things which exist and those which do not. They find that concepts of being and not-being at some place creep into their cogitations to make them intelligible. Again when they refer to becoming they speak of something that does not exist but which comes into existence. Now ignoring the question of the validity of any particular theory of becoming the essential point is evident that somewhere in such theories, either openly or disguisedly, the concept of being is introduced. The concept regardless of its minimal intension cannot be finally effaced. A solution of the difficulties attending it is not to be looked for in the rejection of it.

15. That being is in some sense related to truth we shall take as axiomatic and in examining into the nature of this relation we shall find that it will give us some assistance in attaining an adequate and self-consistent concept of being. We distinguish a relation from a quality in that the latter is an intrinsic character of a thing, whereas a relation involves a conjunction with another thing or things. A relation requires the presence of some other thing, a quality is peculiar to the thing to which it belongs. It may be objected, however, that the relations of a thing are in fact qualities as well as its other qualities and they may be called relational qualities e.g. an item may be said to have the quality of being in motion. We shall not bring up the discussion of this point at present—it is very probable that qualities shall prove to be relations rather than the reverse—but let it suffice to say if relations are considered among the qualities of a thing they constitute a distinct type of quality differing from others

and it is this distinction that we are interested in, not the extension of the term quality. The distinction is significant for our discussion because we have found that being cannot be considered as an intrinsic quality. We are, therefore, led to examine whether and in what sense it can constitute a relation.

16. We have seen, to proceed, that a true proposition is one whose content of predication coincides with its content of designation: propositions and only true propositions have reference. But the immediate content of a true proposition is not an isolated and detached thing. Whether a particular or a universal, it is connected with the whole of meaning by the relation of implication. And apart from this relation it dwindles to nothing i.e. it becomes self-contradictory. Now the conditions to which being must conform are as follows: it must pertain equally to everything, it must pertain equally to every part of everything, it must be logically indispensable to everything. But the implicative relation to the whole of meaning pertains equally both to all things and to the whole and to the parts of each thing, for without it the thing is a contradiction. It is indispensable to, and unretractable from, anything. The being of a thing, in short, is its implicative interrelation with the whole of meaning. Whatever enters such a relation has being, and nothing has being which does not enter such a relation.

17. Truth and being are thus connected. They are, in fact, different aspects of the same thing. Truth is the logical aspect of the system of implicative relations integrating things and being is the ontological aspect, namely, the system of relations considered independently of language, thought or truth. But these two aspects, i.e. logical and ontological, cannot except in an arbitrary and misleading sense, be separated. For every instance of being there is a true proposition and for every true proposition there is an instance of being. It is impossible to disjoin the two. They are, as we have said, interdependent aspects of meaning. We come thus to the realization that the order of being and the order of truth are not essentially two but are identical; the discovery of true propositions is the discovery of the being of things. It is the discovery of their implicative coher-

ence with reality. The nature of the latter, however, we shall discuss in a subsequent essay.

18. It remains now to see in what way the difficulties pertaining to the other conceptions of being appear in the light of this one. In the first place there arises the difficulty of accounting for an element of not-being differentiating any instance of being or any quality of an instance of being from being itself. But when the being of a thing is recognized as its implicative relation to the whole of meaning, every part of the thing, as well as the thing itself, enters this relation. There is, in other words, no part of a thing which can be called not-being. An item is not fragmentized into qualities one of which is being and the others something else. It is, both in detail and in total, a participant in being. One of its qualities can no more be identified with being *per se* than another. All are equally instances of being and no one of them has a preferential claim on this relation. In this manner the difficulty of qualitative division disappears and it is possible for being as a universal to have particular beings as instances without building up the nature of the instance by a combination of being and not-being. The vocable not-being becomes superfluous.

19. The second difficulty relates to the fact that there is a plurality of beings. It lies as we have seen in the proposition that all beings are alike in so far as they are beings—they can, therefore, only differ by not-being. This exigency follows legitimately from the quality-theory of being. Things cannot differ by the quality of being and if they do differ it must be by something else. But any other quality is a not-being. If this quality-theory of being, however, is relinquished and the being of a thing is recognized as consisting in its logical relations with the whole of meaning, whatever enters this relation has being. It follows that an infinity of differences may attach to things and produce an unlimited variety of individual beings. The differences are constituted by different qualities but these, as we have seen, like the thing to which they belong, enter into implicative relations with the whole of meaning and have being equally with that thing. The exigencies thus which attach to the quality-the-

ory of being, namely, that of accounting for the bare possibility of an instance of being and that of accounting for the possibility of a plurality of different beings are inapplicable to the present interpretation i.e. the interpretation of being as participation in the relation of implication with the whole of meaning.

20. Now it may be asked: does this stone before me possess being because of its implicative relations to the whole or does it possess being because I see it? The former we take to be correct. You see it because it is, not vice versa. The seeing of it indicates its being but does not constitute it. The timeless possibility of the stone *is* its being—not its temporary entrance into the cognition of this or that individual. The revelation of particular things by sense perception is simply a partial glimpse of a wider system of terms and relations. And the reason why the world of perception appears as a mixed aggregate of disconnected things is simply that perception shows only the thing but is opaque to its logical relations. If humans could see logical relations with their eyes, in the same manner that they see physical relations with those organs the world would present an entirely different aspect. The result would be comparable to stepping from a two dimensional into a three dimensional space—or, more accurately, like seeing all sides of a thing at once—and these together with its interior and exterior and a panorama of connections and relations issuing from it and extending out through an all-encircling horizon of relations. The thing itself would be distinguished in an entirely different way from the whole in which it exists. It would, rather than appearing as a discrete and separated object, appear, like a wave in the ocean, as merging, without separation, into the totality of its surroundings. But any such perceptual picturing is gratuitous. The logical relations of things are quite as evident to thought as the physical relations to sight.

21. It is clear from the foregoing that being is not an ultimate, underived and independent universal. It involves a rela-

tion. This relation, in turn, includes in its terms an instance of being on the one hand and the whole of meaning on the other. Now the whole of meaning is completely comprehended in the implication of reality. By reality we refer to that, and that only, which is dependent on no other thing. Here then there arises a question about the relation of being and reality: since the being of a thing is constituted by its relation to reality, can it be said that reality itself participates in being? If so, it would have to enter such a relation with itself. To affirm as much, however, would merely be verbiage and a misuse of language. It is meaningless to say that reality is related to itself. Hence reality strictly speaking is not a being at all. It is that, on the other hand, from which being, as we here define it, derives its meaning. It is the presupposition, not the derivative, of being. It stands over being and gives it its validity. Being, the universal, the connection of whose particular instances into an implicative nexus constitutes the rationality of things, issues through that rationality from the nature of reality itself. Reality, in short, is prior; being subordinate. In this priority it is not a sum by addition of all dispersed and fragmentary instances of being, but rather the source from which these instances, in the procession of their implication, logically emanate. Of this relationship, however, we shall speak more at length after we have made other necessary considerations. Until these considerations have been made any further treatment of the concept of being must remain incomplete.

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NOTHING

1. We have, in this essay, to ask: what is the relation of *nothing* to language, what is the relation of *nothing* to being and lastly, what is the distinguishing mark of *nothing*? We shall proceed from a tentative preliminary discussion to the definition of *nothing*, the latter constituting the object of the essay.

2. A word is a sign, vocal or otherwise, which stands for or represents something. If so then every word must refer to something; that which refers to nothing is not a word. But obviously the word nothing refers to nothing. Shall we, hence, cease to call it a word? It seems either that we must relinquish it as a word or discover a content for it. In the latter case, however, it seems that nothing will not strictly stand for nothing. It will stand for something. Now since nothing quite obviously performs some sort of function as a word we shall have to find out what that function is in order to resolve the difficulty engendered in allowing it both to be a word and to stand for nothing. Nothing in some sense must be something. But in what sense? In considering this question we shall examine three points of view.

3. The first of these is the absence-theory. According to this theory nothing is a term used to indicate absence. If, for example, the question is asked relative to a place, let us say, a room: is there anything in the room; the answer may be: nothing. But this *nothing* merely refers to the absence of some things such as furniture which are commonly thought of as being in the room. The *nothing* means the absence of these things. Let us, however, carry the principle to its limit. Let us push the question back until we have not only asserted the absence of anything at all in the room but of anything in the house which was supposed to contain the room and further of anything on the earth on which the house was postulated to rest and again of the earth itself and of the whole visible universe and of any other sort of items over and above the universe—do we ever reach a pure absolute absence which is not the absence of this or that thing but of any

being whatsoever? It is quite clear that we do not, for absence is a relational category. It is always absence relative to something. In order to affirm the absence of all being, being itself is already implied to make the conception intelligible. Absolute absence is a term which can be given no content, for the implications of any content attributed to it contradict the conditions posited by the term itself.

4. The second view considers nothing as the opposite of being. Nothing is called non-being. This view, however, has never been made intelligible. First, that which is non-being cannot be. It is a clear contradiction to assert its being. Those who assert the being of non-being, e.g. those who assert that a given thing or concept, for example, matter, is non-being, merely distinguish between two types of being one of which they wish to cast into insignificance by attributing an antipathetic name to it. It is evident that whatever participates in being *is*. Being and its instances constitute an absolutely comprehensive class. This class has no interior or exterior: it is meaningless to apply these categories to it because they imply a limit. But being is a unique universal. To apply a limit to it would imply that there is something from which it could be excluded; this is, however, with respect to all dependent and determinate items of any kind, contradictory. Hence whatever non-being may mean it does not refer to something excluded from the class of beings.

5. To say, moreover, that non-being or nothing is the opposite of being is merely an elliptical way of saying that being has no opposite. The concept of the opposite is confused and vague. It is something which seems to have significance but the significance of which, on analysis, vanishes. It tends to lead rather to apparent than valid conclusions. It has, however, two interpretations which are fairly distinct. One asserts that the opposite of a thing is another thing which has the widest difference from it within a common genus e.g. white is the opposite of black within the genus color. It is clear that non-being cannot be identified with this kind of an opposite. Non-being cannot be in the same genus as being.

6. The second interpretation asserts that oppositeness is simply otherness. Anything that is other than A is an element

in the oppositeness of A and all things other than A constitute the whole range of oppositeness to A. e.g. an environment is called the opposite of an organism. Now it is clear that oppositeness in this sense is a relation that always has two terms. If one of these is sublated the relation falls. It is, however, an odd sort of thing which has its being in being other than being even if that being is called nothing. The interpretation of nothing as the opposite of being is merely a badly thought out attempt to account for the use of a concept seemingly indispensable which, when regarded as if absolute, is logically intractable.

7. Now it is possible that the concept of nothing can be treated in a much simpler way. If we consider the function that it performs in language we can discover certain significant things about it which lead towards an adequate definition. Our question, then, remains as before: what is the content for the word nothing?

8. If we consider the words no, none, not any, nothing, we find that they are all forms of negation. Whenever they are used they deny something. *Nothing*, like the others, is a species of negation. But negation is of various types, and it is possible that all of these types do not involve the concept of nothing. If we say: A is nothing, we assert something different from the proposition: A is not B. Both, however, are instances of negation. But when we say: A is not B, we still retain a reference value for the term A. When we say: A is nothing, we have no reference value at all for A. A, it is asserted, is not. There is no content to correspond to the expression A. And here lies the nature of nothing. It is an expedient of grammatical convenience for expressing the non-reference between an apparent word and any content whatsoever. It is a linguistic category and without language would not be.

9. Nothing, therefore, as a universal is, in an intelligible sense, something: it is the status of contentlessness or of non-reference which removes indicative force from a mere utterance or from an ostensible expression. It is not, however, *always* applied to meaningless sounds or marks, because their non-reference is obvious. No one would go to the trouble to say that a

znadcx is nothing. But *nothing* has its proper sphere in indicating the unconditional non-reference of apparent words or expressions. These *seem* to have content but are empty. *Nothing*, therefore, is, strictly speaking, that species of negation which denies reference to apparent symbols.

10. Now we have seen that the being of a thing is one and the same with its implicative relation to the whole of meaning; that truth is the linguistic-logical expression of being—a true proposition is simply a proposition which has meaning. Error, on the other hand, is absence of meaning i.e. the non-reference of an apparent expression. It is evident then that error and nothing constitute the same concept. Every error seems to refer to something, but in fact does not. It is an instance of non-reference. The distinguishing mark, however, of error is contradiction. The character, furthermore, which makes an apparent expression erroneous i.e. non-referential, is contradiction. But negation of reference, i.e. the absence of content in linguistic expression, constitutes the nature of nothingness. The distinguishing mark, therefore, both of *nothing* and of *error* is the same, namely, contradiction.

CATEGORIES

1. By a category we refer to that which can be predicated of something. It is evident thus that the categories are universals. Particulars cannot constitute predicates. There is a difference, however, between types of categories since they are not all on an equal level of priority. Some presuppose others.

2. Categories are either primary or secondary. Primary categories are those which are present in an item, if being itself is present i.e. they are given with being. Secondary categories are those which may or may not be present if being is present. They are thus not directly but mediately connected with being. The commonly used secondary categories are those of natural science e.g. physical object, motion, living body etc.

3. The study of primary categories *per se* is metaphysics i.e. ontology. It is, owing to the ultimate nature of its subject-matter, absolutely prior to all other studies. Every other science presupposes metaphysics. It is sometimes asserted (1) that metaphysics can be ignored (2) that it is vain. This, however, is untenable. Those who ignore it ignore the basic concepts which they are employing. Hence they fail to think their position through. On the other hand if metaphysics is vain then any secondary science is vain. For whatever categories such science uses, they depend on prior categories and the adequate understanding of the one involves that of the other.

4. The ostensible opposition to metaphysics which appears from time to time has no lasting endurance because whenever men try to think, they are led to that study. Metaphysics is a fundamental interest of man (and in a wider sense of any finite being) because it is indispensable for him in his endeavor to orientate himself in the universe. The fundamental concepts *being* and *reality* can never be dispensed with and if they disappear in one form it is only to reappear in another. The attack on metaphysics is merely metaphysics in disguise; a man who is unaware of his metaphysics thinks he has none.

5. Men will never be satisfied in the long run with a point of view which contains radical contradictions, i.e. they will not be satisfied with a science which presupposes an ultimate which it ignores or denies. The philosophic acumen of different ages rises or falls, and when the latter occurs the world is flooded with non-rational philosophies which subsequent ages think their way out of. In the world of thought as in the world of nature all roads lead to metaphysics.

6. Let us return, however, to the study of primary categories. These categories differ from others by certain distinguishing characteristics. Categories which do not have these characteristics are secondary or derived. The characteristics of the primary categories are as follows:

I. They are ubiquitous. They are coterminous with being. Whatever has being *eo ipso* participates in them. They belong to items not in so far as these items constitute this or that thing but simply as they constitute beings.

It follows by way of corollary (1) that all primary categories are compresent i.e. present together in every item, and (2) that since they are themselves items of being they participate in and involve one another.

II. They are ultimate and irreducible. They are not conceivable as derivatives of other categories nor is one reducible to another. They represent the fundamental characteristics of things. They cannot be reasoned away, reduced by coalescence to a smaller number, or interchanged. One is not endowed with greater independence than another. They are, on the contrary, mutually dependent on one another.

7. Those categories in sum which are ubiquitous, compresent in all items, connected in an organic nexus and mutually dependent but mutually irreducible are primary categories.

8. It is clear that such categories are all categories of being i.e. ontological categories. Epistemological and cosmological categories are, on the other hand, secondary and dependent. Their existence is unintelligible without the primary categories. In order that any cognitive relation can be, the cate-

gory of relation itself, and whatever it presupposes, must be. In order that there can be any meaning to the terms subject and object, an order of being is required in which those terms are intelligible. Metaphysics is, in short, the prolegomena to every epistemology, present, past or future.

9. In order, moreover, that there can be a cosmos there must be antecedently the fundamental categories which any ordered whole or any whole at all presupposes. This applies also to any science subsumed under cosmology. And, in general, the being of anything or any category not primary, depends on and presupposes the being of wider categories and these, if they are not primary, on primary categories.

10. Now let us turn to a fundamental character of being the nature of which contains an inexhaustible range of meaning and the study of which correspondingly leads to a progressively deepened insight into the whole realm of ontological relations, namely, the category of number.

NUMBER AS A CATEGORY OF BEING

1. It is sometimes denied that if a particular number is given the whole number system follows. A number is thought of as a detached and isolated item. But whenever a thing is given its presuppositions are also given. You cannot posit a triangle without positing lines and points, nor a man without a heart or nervous system or whatever is essential to his nature. With the possibility of a given number are given concomitantly the fundamental requisites of the number system i.e. the axioms which make the number possible. If these, however, are present the whole number system is by implication present. If we are given an individual number we are given number itself and since every universal, not restricted by definition, has an infinite number of particular instances (Essay on the Universal and Its Relations, par. 3, V) we are given an infinite number of numbers and their relations. But this is the number system. Hence, in brief, if any single number is posited all the presuppositions of that number are posited and these contain implicitly the whole number system.

2. Now we have seen that any item is logically unstable or contradictory when considered apart from the nexus of its implication; and this implication is unlimited; it involves the whole of meaning. Such implicative interconnectedness, moreover, applies to the primary categories as well as to other items. Since each of these is an instance of being possessing all the attributes of such an instance they presuppose and involve one another. Number, therefore, is not separable from other categories. Thus if we posit number we not only posit the number system but likewise the entire system of primary categories. Let us consider this relation more in detail.

3. Any universal the retraction of which is self-contradictory necessarily is. Being, however, is such a universal. But if being necessarily is then an instance of number (for being is an instance of number) necessarily is; and, in particular, that instance

called unity since being is a unity. Number therefore and everything that follows from it, namely, the whole number system, is immediately given with being. Number is, in other words, a primary category. Whatever is an instance of being is by that fact itself an instance of number. This is true whether the instance of being is universal or particular, possible or actual. Wherever being is, there also is number. There is no transcendent domain nor any hypothetical reality which is separable from the realm of number since by its very being it already involves number.

4. Now while number is sunk in the heart and essence of being there is a still profounder significance to it which we have not yet indicated: whatever is, not only participates in, but is a number itself and things in the world of nature i.e. perceptual objects, are nothing more than visible numbers. In what manner this is so we shall proceed to discover.

5. Unity is compresent with being, but number with unity, hence if being is present not only one being is present but a duality and hence a plurality. The one is contradictory without the many in whatever way it is considered but where the many i.e. plurality is, such plurality involves and implies relation. Since being cannot be without number and relation, it cannot be without difference for it is clear that difference is a relation in any plurality even that of being, number and plurality. Difference, indeed, is not only a relation but it is the fundamental relation of all relations. Any finite item is constituted by its differences. The only factors that make a thing precisely what it is, are its differences from other things. Retract its differences and it is nothing. But its differences are its qualities and the thing is the manifold of its qualities and nothing more. Now there are relations of difference constituting the qualities of a thing and relations of difference between these difference-relations. The stability or substantiality of a thing is simply the stability or substantiality of its essential difference-relations. Change one of these either by changing a relation of difference between difference-relations or a relation of difference on which other difference-relations rest, and you change the quality and nature of the thing. Now the constituents of things are relations, but relation involves proportion and proportion involves a functional rela-

tion, i.e. a difference-relation dependent on other difference relations. When the differences between two or more things are mutually determined by the natures of the things the relation is functional. But the natures of the things are nothing but nexa of proportional differences and hence of functions. Proportion is a propædæutic concept applicable to relation which reveals its functional character. Whatever is as a finite instance of being, exists in functional relation to everything else and it is only in the particularity of its functional relations that it either has being or attains uniqueness. But let us return to the concept of number.

6. From number we have not only a plurality of subordinate number systems but of particular numbers and from particular numbers we have the fundamental numerical categories of the one, the greater, the less and the equal. From the greater, the less and the equal we have the processes of addition and subtraction which develop by implication into multiplication and division, involution and evolution, differentiation and integration, permutation and combination and other relational orders of numbers. These are computational processes only in that they are temporal manifestations of invariable relation systems. The combination and ramification of these relation systems brings with it the growing complexity of compound numbers out of simple numbers and it renders evident the vast power of generalization involved in variables of compounded numbers which on their part constitute the realm of functions. But we have seen that qualities are differences and differences are functions and since a thing is the manifold of its qualities it is an organization of functions and as such exhausts its nature in number. The world of things is a matrix of functions, and, so far as that world is perceived, a cosmos of manifested numbers.

7. Now it is common to distinguish quantity and quality as fundamental predicates of a thing. Quantity, however, is one of the difference-relations of the thing and as such constitutes a quality like the other qualities. Quantity is one species of quality and the quantity of any specific thing is one of its qualities. Since the nature of a thing, however, is completed by its quantity and qualities, and since quantity is an instance of quality and quality a species of relation, a thing is a relation of relations and these

relations, since they relate relations, enter a regressus which proceeds to any desired degree of fineness. This fineness proceeds to a point less than any assignable degree and in this fineness lies the uniqueness of the thing which as a particular has the uniqueness of a compound but particular number. Since, however, the particular implies and involves the universal and indeed is an expression of the universal the universals also, as universalized forms for relational complexes, are numbers and the things emanate from the universal in the same manner that particular expressions emanate from generalized mathematical expressions (e.g. any system of equations for lines or circles obtained by varying the values of the parameter in the equations containing it) and in doing so advance to a constantly delimited set of determinations. The uniqueness of the individual thing is the uniqueness of number and the universal ground of the thing is the absolute universality of number. Universals are points of rational orientation in the domain of being. They are progressively ordered fundamental forms which conjoin all subsidiary relational nexa and as such are numbers. Thus while numbers in their generalized aspect are universals, conversely universals are numbers. Such numbers, however, may be called ontological in contrast to the specialized numbers of common mathematics, which only give a partial suggestion of them in their quantitative determinations, not revealing their complete logical implication.

8. It may, at this point, be objected that in our essay on truth we said that the relation of consequent and presupposition is a convenience set up for discursive logic and that consequents are also presuppositions in the sense that the presuppositions themselves presuppose the consequents. Hence particulars as determinant numbers do not issue from universals as generalized ontological numbers but are simply coördinate with them in a coherent whole of ineffaceable relations. You cannot posit a thing, whatever it may be, without positing all other things exactly as they are, i.e. the presupposition of any thing is, in fact, all the rest of things. Anyone, however, raising this point has not caught hold of an objection but one of the profoundest meanings inherent in logic and a meaning which we shall endeavor to uncover in the following essays. The reason, as we have else-

where indicated, that such an insight is not generally prevalent is that things are envisaged under the aspect of perception i.e. sense perception, and such perception gives but an insignificant fraction of the relational whole which constitutes a thing. The essence of logic is consistency and consistency in logic and coherence in the realm of being are expressions of one and the same thing. If, in other words, the world is intelligible it is coherent and if it is not intelligible then it is unintelligible to make the statement that it is not intelligible.

RELATION

1. Since relation involves plurality it is evident that it is consequent upon number and that a treatment of number cannot be rendered adequate without a complementary treatment of relation. Wherever there is an instance of number, in the form of plurality, there is relation and thus relation and number go hand in hand. The exposition of the status of relation with respect to number will therefore be the subject of our essay. We shall, however, also be led to a further consideration of the significance of relation in the constitution of particular things and of universals.

2. While a relation comprehends a plurality of parts it is in itself an integral whole. It cannot be considered as built up of parts since the parts are not such till they are already in the relation. Rather in the examination of a relation the parts are analysed out of it. These parts consist in a set of terms, a connective and a direction.

3. A relation can be analysed into at least two terms; it may have more than two. An example of a relation with two terms is the sine of an angle.

4. Now the terms of a relation are determined by the relation and not vice versa i.e. the relation makes the terms. Outside of a relation its terms cease to be what they are as terms of it. Examples make this clearer than any general argument. A note in a melody is one thing in the melody and another thing taken singly. An eye is one thing in the head and another thing outside of it. The diagonal of a parallelogram is one thing in the parallelogram; outside of the parallelogram it is not a diagonal at all. And thus it is for the terms of every relation.

5. A term is related to whatever its relation is related to. This we take as evident since if the term were not so related it would not be related in its relation. E.g. if the area of one circle is related to that of another circle the radius of the one circle is also related to the area of the second circle.

6. A term may be common to two or more relations. This follows from the preceding paragraph since if it were denied relations could be related without relating their terms, but this is contradictory. We shall call this property of the sharing of terms by relations the communion of relations.

7. No term of any relation is prevented from entering any other relation which is not logically incompatible with its relation; or, obversely, every term can enter every relation which is logically compatible with the relation of which it is a term, e.g. if A is a linear part of a triangle it can be part of a square; if A is a linear part of a triangle it cannot be part of a circumference.

8. Every term enters an infinite number of relations. This follows from the previous proposition since for any relation there is an infinite number of relations which are compatible with it, e.g. the number 2 is related to every other number.

9. Since terms derive their character from their relations there are as many kinds of terms as there are kinds of relation. This proposition will become more evident hereafter.

10. The connective or basis of a relation is constituted by the qualities of the terms which make them peculiar to that relation e.g. if A is greater than B, the basis of the relation lies in the relative quantities of A and B.

Thus the basis of a relation is not properly between but in its terms. It is inaccurate to map relations as if somehow or other the connective or basis of the relation were a third independent interterminal element. The terms of a relation are in its basis and the basis is in the terms. The basis or connective is not a third separate thing. Hence the argument that relation is impossible because, between a relation and its terms, there is an infinite series of relations, is invalid. The propensity to think of a connective as a *tertium quid* we shall call the fallacy of relational substantialization. It considers a relation as a compound of substances.

11. The direction of a relation is the order in which the terms may be considered with respect to the basis e.g. if A is greater than B the direction is from A to B. If B is a part of A the direction is from B to A.

12. The direction of a relation is nothing apart from its

basis and the basis is nothing apart from the terms. The terms, however, are not terms except as they are comprehended in the basis and direction. A relation as we have said is an indivisible whole. We shall refer to this characteristic as the organic nature of a relation.

13. We have seen that relations share their terms and that there is a communion of relations. This simply means that relations interexist and form a continuity. We shall refer to this condition as the coalescence of relations. The two fundamental characters in the nature of relations are that they are organic and coalescent. A succinct illustration of this is seen in the functions of an angle.

14. We may turn now to the kinds of relation. The kinds of relation are infinite but they may be divided into two primary classes, namely: general and special. The general types of relation are distinguished according to the terms, the basis, the direction and the relation of the relation to other relations. These general types are met everywhere in the commonest daily experience and their names are self-descriptive. They are divided as follows:

I. According to the number of terms:

- a one—one
- b one—many
- c many—one

II. According to the direction of the relation:

- a—asymmetrical, i.e. one directional
- b—symmetrical, i.e. reciprocal.

III. According to the continuity of the relation with other relations:

- a Intransitive: where the terms of the relation are not common to other terms with respect to the same relation.
- b Transitive.*

* The foregoing classification is due mainly to Russell. cf. *Introduction to Mathematical Philosophy* Chap. V.

All transitive relations are multiple and multiple relations are of three kinds, aggregate multiple, ordered multiple and serial multiple. The aggregate multiple relations are relations in which the order is indifferent to the interexistence of the terms.

Serial relations fall into two fundamental types and a number of subsidiary types. The fundamental types are linear and circular. The nature of linear series we take to be evident. An example of such a series may be found in any arithmetic or geometric progression. By a circular relation we mean a multiple relation in which the terms are connected in such a way that the relation traverses them in serial order and returns in the opposite direction to each term respectively. An example of such a relation occurs where A is the debtor of B, B of C and C of A.

15. All of the foregoing types of relation may be combined in different ways to make, if like types are conjoined, compound relations; if unlike, complex.

16. An important type of compound serial relation is that which we shall distinguish by the adjective *radial*. By a radial relation we mean a compound relation whose elements are linear serial relations which have one and only one term in common. An example of such a relation is found in a nexus of causal series which intersect at a common event e.g. a scientific discovery. The convergence of independent causal series in any event whatsoever furnishes an example of this type of relation. A radial relation is constituted by (1) a complex of convergent series which are the elements of the relation, (2) a center which is the term in which they meet. Radial relations are concentric if (1) the direction of the elements is towards the center and (2) they terminate in the center; eccentric if the direction of the elements is away from the center and percentric if the elements pass through the center. As we shall afterwards see the whole realm of being constitutes a concentric radial relation the characterizing basis of which is rational coherence.

17. It is to be noted that while the terms here used are taken from those applied to spatial relations their present application is devoid of any spatial connotation whatsoever. It is absolutely general and the spatial types which conform to these terms are only very special instances of them.

The significance of the various types of relation referred to will become more evident as we go on.

18. The general types of relation enumerated above appear everywhere in a limitless variety of special forms which are subdivided according to the characters of the terms which form the bases of the relations. A number of these special forms may be suggested in order to show the vastly relational character of the realm of being. Relations may be logical, ontological, mathematical, physical, chemical, astronomical, geological, biological, physiological, racial, esthetic, ethical, political, social, economic, legal and so on indefinitely. Any adequate treatment of relations would involve a complete analysis of the general types, an investigation into the interrelations of these types and an exhaustive exposition of the presence of these fundamental types in all forms of special relations and relational complexes. Such a treatment, however, would constitute nothing less than a complete philosophy and is an object to be approached as an end rather than an accomplishment the full realization of which is to be expected.

19. We now have to consider four cognate subjects regarding relation, namely: the respect which relation bears to a particular thing, to a substance, to form and to number. We shall take these up in order.

20. From the principle of the communion of relations we derive a further distinction between them: relations are component or integral. They are integral if they are considered as wholes, component if considered as parts of wholes. Integral relations may be compounded from component relations. Relations are compounded when they have a common term or lead to a common term. A compound of relations is a nexus. This concept of nexus is extremely important in any study of the primary characteristics of being.

21. Now all particular things are terms of relations. This is self-evident but it also follows from the definition of being (*Essay on Being*, par. 16). Terms, moreover, are involved in and dependent on relations. This follows from the organic nature of relations. The elements of particular things, there-

fore, are relations and relations compounded into nexa are things.

22. But the terms constituent of the relations which compose a thing are themselves relational nexa; for every term enters an infinity of relations which determine its nature. Hence a thing is a relation of relations and the terms of the component relations are relations, and so on indefinitely. In a word, a particular thing is an infinite regressus of relations. This regressional character of a thing follows as a logical consequence from the nature of a term and from the coalescent nature of relations. The term is nothing outside of its relations and in its relation it is a common term of an infinite number of coalescent relations.

23. Now certain consequences follow from the character of a thing as a relational regression. First it follows that a thing is unlimitably analysable. There is no exhausting its nature into ultimate unanalysable elements. Men keep on discovering and discovering but what they always discover are relations and still further relations. The scientist envisages the world of physical particulars as made up of the relations of molecules, molecules of the relations of atoms, atoms of the still further relations i.e. those of electrons and protons; he then resolves the electrons into relations of space-time configurations and the whole of space-time into a pure nexus of relations—he can only stop when he finds relations which will give him complete empirical correspondence of principle and data but the relations go on indefinitely beyond his ken.

24. The second consequence is as follows. A series is a unit of reference; it can be referred to as a whole. This we take to be self-evident. But the infinite regress which constitutes a thing is a series. Hence a thing as such a regress is, or can be, an object of reference; while it is a true multitude, an *ἄπειρον*, it is also a true individual.

25. Thirdly, the uniqueness of a particular thing follows from the fact that its constituent relations are inexhaustible. Each of these relations differentiate the thing from other things. But every relation is an instance of being. It hence participates, as we have seen, in the whole of meaning. But this participation of a relation in the whole of meaning constitutes its intelligibility

and from its intelligibility ensues both its existence and its entrance into relations with other relations (Essay on Being, par. 16). And hence we are brought to the proposition that the character of infinite regress with its minutiae of uniqueness which pertains to any particular follows from and depends on the intelligibility of that particular. Without this intelligibility the particular would neither be nor be unique. The uniqueness, in other words, and rationality of any particular thing are interdependent and complementary aspects of it.

26. We have now considered the nature of relation and of the relational composition of particular things. We have further to consider the nature of substance and how it is related to a thing and to relation itself.

27. By an essential relation we mean a relation which a thing cannot relinquish without becoming some other kind of thing. If, for example, the sine of an angle, less than 90° and greater than zero, approaches and reaches zero the angle becomes a straight line.

28. By an unessential relation, on the other hand, we mean a relation which a thing may enter or not without altering its essence. E.g. a man can be swimming, walking or standing. In each case his nature as a man is unaltered although the particular nexa of relations he is in differ.

29. By a substantial relation we refer to a relation between a thing and its unessential relations such that the latter depend on the thing i.e. the substantial relation underlies the unessential relations.

30. Now by a substance we mean the independent term in a substantial relation. Sometimes substances are called material. By this is meant that the qualities of a material object inhere in or are dependent on another part of the object i.e. the substance, which possesses them as attributes. This view we shall presently endeavor to indicate is untenable but it nevertheless furnishes a suggestion of the common usage of the term substance.

31. All instances of being, to continue, enter a system of relations. And every item enters a system of relations essential to it which constitute its essence. Therefore (1) no substance

has being apart from relations and (2) since a substance can only be such as a term of a relation every substance is a context of relations and only a context of relations. I.e. we cannot strip a thing of its relations one by one and finally reach an unrelated thing-in-itself. The relations are infinite and the substance stripped of its relations is nothing relative to anything; it is nothing relative to being and hence nothing. A thing, therefore, is related to a substance, as whole is related to a part and the substance of a thing is nothing other than the aggregate of the essential relations which constitute the thing.

32. By form we mean the relational variation or relative difference of a thing which respect to other things the total of whose relations forms a situation. All form is form in a situation, whether it is logical, physical, esthetic or whatever variety of form it may be. And thus every form since it is a system of differential relations is a function of other forms i.e. forms are relations related functionally. And the functional relations of a form enter into the essence of anything subsumed under it. I.e. the essence or universal in which a thing participates, the substance of the thing, is a syntax of functional relations. But such a system of relations is a form. A substance, therefore, as constituting such a system is pure form. The relation of substance and attribute is the relation of form and function. Substances are distinguished from things only in that they are essential elements in the form which makes up the thing. They are distinguished from other substances only as one form is distinguished from another form.

33. From the previous essay we have seen that a number is a context of relations. We might say *ordered* relations but order itself is nothing other than a relation. There is, ontologically speaking, no such thing as disorder since disorder is merely another kind of order i.e. disorder is a characteristic given to a relational set for the descriptive convenience of a finite observer and is merely a contrast made for practical reasons, between a preferred and non-preferred type of order.

34. But we now see that a substance is nothing other than an integral form of essential relations i.e. an essence or universal. Therefore we assert the identity of numbers and uni-

versals. Numbers and universals are one and the same and the logical consecution of forms which constitutes the content and structure of being is an ordered realm of coalescent numbers. Within this structure an infinity of individual numbers may be distinguished but no individual number is disconnected from others or from the whole. Each number as a relational context enters into a general syntax of relations. The growth or extension of any relational context into a wider system of relations by the communion of terms is the same as the expansion of a number into a more complicated number. It is comparable to the indefinite expansion of a binomial in terms of the theorem of that name.

35. What it means to say, however, that numbers and universals are one and the same merits consideration. The apparent jump from number to universal may seem to form a gap which requires some intermediate thing to render it comprehensible. Such an intermediary, however, is everywhere at hand: it is namely, the category of proportion. Things are proportions and proportions are the essences of things. In what way this is so we may render evident by a very simple example. Let us let r , the radius of a circle, equal $\sqrt{\frac{3}{2}}a$. Taking the proportion:

$$(x^2 + y^2) : 3 :: a^2 : 2$$

then,

$$2(x^2 + y^2) : 6 :: 3a^2 : 6$$

and by alternation,

$$2(x^2 + y^2) : 3a^2 :: 6 : 6$$

that is,

$$2(x^2 + y^2) = 3a^2$$

or

$$(x^2 + y^2) = \frac{3}{2}a^2$$

but

$$\frac{3}{2}a^2 = r^2, \text{ therefore,}$$

$$x^2 + y^2 = r^2$$

or

$$(x^2 + y^2) : 1 :: r^2 : 1$$

But this is the equation of a circle i.e. it is the system of relations in the form of a proportion which constitute the nature of a circle (in this case where the center is at the origin).

36. Now the essence of philosophy is the pursuit, to the furthest possible extent, of the consequences of propositions. Hence we have to ask what follows from the proposition that numbers and universals are identical. We do not here, of course, propose to deduce all the results of such a fundamental thesis. However, we can point out two of its consequences which are significant for the nature of thought.

37. The first is that mathematics (as well as logic) has a wider meaning than that under which it is commonly subsumed. Mathematics as the science of number becomes the science of all relational structure. Since the realm of being is the world of relations which composes the whole of meaning and since mathematics is concerned with this world in general i.e. with the system of all numbers and hence of all universals, mathematics and ontology become one and the same science. But the science which from another point of view is concerned with the relations of this realm is logic for logic is nothing other than the exposition of the formal relations of universals, among themselves and among particulars, which make up their unity in a nexus of implication. Logic, then, and mathematics and ontology constitute a single science.

38. Secondly it follows from the identity of universal and number that the realm of being with the items which it includes is susceptible to symbolic representation i.e. it is a communicable realm.

39. By a symbol we mean an item the relations of which as a sign can be collimated with the relations of another item as content. Symbols may be both similar with and correspondent to their content or merely correspondent. An example of the former is a picture e.g. a portrait; of the latter a word e.g. a proper name. Most symbols are of the second type.

40. By a root symbol we mean a symbol which is not constituted of other symbols and which can be colligated with other root symbols to form a compound symbol. The symbols for plus

and minus are root symbols. Root symbols are composed of elements which may or may not themselves be root symbols. Such elements we shall call radical terms. By an alphabet we mean a system of radical terms. The expansion of an alphabet according to a definite set of principles into a system of root symbols and these into a system of compound symbols constitutes a language. The principles of the expansion of a set of radical elements into a language constitute a grammar. A few radical elements may by compounding, through permutations and combinations, generate a whole system of symbols. This property of symbols which permits of their indefinite extension together with their capacity to provide a variety of modifications referable to any variety of modifications of content is of the greatest practical significance. It is that which gives language power.

41. The relations of the terms of a system of relations, if the terms are correlative with symbols, may be described by the relations of the symbols. I.e. a relational context of terms may be represented by a relational context of symbols. In fact it may happen that the syntax involved in a context of symbols may correspond irrespective of any special content, to several different sets of terms. The development of such a system according to logical principles extends out parallel to several sets of ontological relations. We have an example of such a system in algebra, which, starting from primary symbols expands and varies them indefinitely on the principles of association, commutation and distribution and produces a language for the representation of arithmetical relations. In the cognate science of analytic geometry we have an illustration of the way in which the systematic development of algebraic symbols can represent the relations of another system of items, namely, geometrical relations.

42. It is, from this fact of the correlation of ontological and symbolic systems that arises the magically suggestive power of language. Through it language becomes an instrument of discovery. The orderly development of symbols into new compound forms generates the expressions for previously unknown universals. The cognition of these universals is derived from the

interpretation of the symbolic forms. Were this not the case it would be futile to talk to men about things which they had not immediately experienced. Indeed the communication of knowledge through the media of symbols would be quite excluded. But such communication occurs. A man who was never acquainted with the concept of gravity can become acquainted with that concept by studying the formula in which it is expressed. A man who is ignorant of the character of a logarithm can learn what that relation is from its definition. In short, the correspondence of symbolic with ontological relations produces the possibility of learning through linguistic composition. Perhaps one of the most striking examples which can be found of this process is the discovery by symbolic expansion of the properties of complex numbers.

43. Now it is curious and noteworthy that the very correlations between symbols and things are themselves given in the realm of being. This realm envelops both itself and the languages which express it. For any set of relations there is a set or plurality of sets of symbols correspondingly related. For any nexus of content there is a nexus of symbols. These are *there* to be discovered. The realm of being is full of alphabets and full of languages. It speaks, as it were, of itself in a multitude of tongues. The problem left for men is the discovery of these languages and the selection of those, or that one, which is psychologically best relative to the selectors. It is to be remembered, however, that the whole possibility of representation by symbols depends on the relational character of things, for it is owing to the identity of universals and numbers that the relations of symbols can be indicative of the nature of things.

44. In conclusion we shall point out a difference, relevant to our subject, which is not without considerable significance in human affairs, namely, the distinction between substance-minded and relation-minded men.

45. It is characteristic of the substance-minded man to see and emphasize separate substances wherever he looks. Things

are considered as concrete existents apart from their relations. They are disconnected solid objects.

This substantializing tendency shows itself in every branch of thought. In ontology it produces materialists and naïve realists. In physics it is evidenced in a number of ways, of which we shall only mention one or two. A striking instance of it occurred in Aristotle's substantializing into crystalline substances of the celestial spheres of Eudoxus—spheres which that thinker considered as hypothetical constructions erected for the explanation of astronomical relations. Later in the history of the science we find heat explained as a substantial fluid. Further, the ether of modern physics is a kind of attempt to substantialize space and make a *thing* out of it. It is a scientific descendent of the spheres of Aristotle. In psychology the substantializing of the soul has a long history. In later centuries it has taken the form—especially since Descartes—of interpreting thought and feeling as components of a hypothetical psychic substance or stuff which is given the name of consciousness. In ethics we have absolutism, namely, the consideration of individual cases as subject to general imperatives irrespective of their particular relations. In politics imperialism. The conquest and acquisition of territory is one form of growth that the substance-minded man can understand. In common life we have the emphasis on external goods and tangible property rather than on psychological values and human relations.

46. With relation-minded men, on the other hand, it is never the separate thing but always the whole situation, the complex of relations, which is significant. In metaphysics they see things in terms of logical form. In physics in terms of mathematical system. In psychology the mind and soul are relational contexts and in ethics a good is proposed which takes the situation not separated acts into consideration. In politics valuable social and international relations are esteemed above national aggrandizement. In common life the creation of desirable human relations is set over acquisition.

47. Thus there is in general a contrast between the two modes of envisaging things.

As thinking emerges from its elementary stages it tends to

pass from the substance-minded to the relation-minded attitude. In fact genius can be perhaps most concisely defined as the intuition of relational contexts. It is this intuition that produces the flood of illumination by which clear-minded men have been able to render manifest the nature of existent things in so far as that has been done. Consider, for example, the exquisitely simple and clarifying insights of Galileo in his analysis of the relations involved in the dynamics of falling bodies. As philosophy advances it emphasizes the category of relation. There are different lines of progress along which men engaged in philosophic thinking proceed. But these different philosophies are different points of advance on the radial avenues of dialectic integration which converge to the nodal point of absolute meaning. As men proceed along these avenues they tend—according to the points of advance which they reach—to view particular things as relational units coherent in the whole of meaning, rather than as discrete, separate and isolated substances.

In summary, we have, in this essay, emphasized the following theses: the organic character of a relation; the nature of a particular thing as a regressus of relations; the coalescence of relations into the syntactical whole of the realm of being; the formal character of substance; the identity of number and universal; the mathematical character of the context of universals. Let us turn now to a consideration of two primary types of relation.

DIFFERENCE

1. The possibility of negation involves difference and hence those who deny the reality of difference imply by their denial the item that they deny. They fall into a solipsism of incommunicability to which we have previously alluded and in so doing contradict their philosophy in expressing it. Language, as well as other finite items, disappear into a background of unutterable and irrational indifference i.e. into nothing. Any synthesis which endeavors to resolve distinctions and oppositions by the sublation of difference not only violates the primary methodological prerequisites of logic but raises more problems than those it purports to solve. Difference is an ultimate ontological fact which we are obliged to recognize and understand and cannot reason away. But it is not arbitrarily given. Even though the immediate perceptual differences of the senses may not be given credence as logically intelligible still the being of difference follows a priori from the logico-ontological presuppositions of any thought whatsoever about being.

2. While the being of difference is subject to proof its nature is not subject to definition. Difference is a primary fact of being but it is indefinable. It is, to be sure, a species of relation but its differentia are not expressible in any terms which do not antecedently presuppose a knowledge of itself and this is clearly indicated by the term *differentia*. In order to indicate the differentia of difference, difference itself is already postulated—a condition which applies to the concept of difference alone. Hence any valid non-tautological definition is unavailable. It is not sufficient to define difference like likeness in terms of participation in a universal e.g. likeness consists in participation in the same universal, for correspondingly difference would be participation in different universals but this already introduces the concept of difference which was the thing to be defined. In fact it is only through difference as we shall see that definition is possible and thus if a

definition of difference is constructed it must presuppose for its validity difference itself.

3. It follows from the nature of difference that there is an infinite manifold of particular differences and certain problems arise concerning the relation of these instances of difference to difference itself and to being. First appears the problem of the source and origin of difference and secondly the problem of the classification of differences.

4. Since the world of difference permeates the world of being and the included realm of existence, the problem of the origin or source of differences is nothing other than the problem of creation, for the essential demand of this problem is an explanation or a rendering intelligible of the variety of items as a variety in the domain of being. The problem of creation basically expressed is the problem of how it is that differences participate in being. On what does difference depend and how are differences produced? Or, in other words, what constitutes the relation of creation between the one and the many? Needless to say the problem cannot receive an adequate answer till the categories of existence as well as those of being are all examined, but certain things may be said by way of preliminary orientation.

5. First, since an infinite number of differences follow from the being of difference, the differences of things are timeless and creation cannot be conceived as a temporal process. The many do not issue from the one at random nor in any physical sense but necessarily and in logical consecution. And in this emanation of timeless creation the process advances like the generation of natural numbers to the realization of every possible difference. It is essential to see this through and through to understand in what sense an intelligible answer exists to the question which all people at one time or another ask, namely, why does such and such a thing e.g. evil, exist. The answer is not to be sought in temporal-teleological considerations based on the value-judgments of a given species of organisms but in a universal context of logical resultants in which the meaning of the value-judgments is altered by their relations to a necessary *milieu* of logical relations unlimited in scope.

6. It follows, furthermore, from the non-temporal character

of creation that there is no such property as novelty in the realm of being. Novelty is a temporal category constituted by a differential relation embracing finite items and it only exists in such a relation. Absolute novelty, or an instance of absolute novelty, i.e. a difference-relation which in no sense had being but acquired being, or, having had being, lost it, is an instance of apparent language. That this combination of words, namely, a difference relation which in no sense had being etc., has meaning can only be demonstrated by the exposition of its logical preconditions but in such an exposition the *absolute novelty* is made as old as creation itself, i.e. eternal or non-temporal. For that, the logical preconditions of which are, is by implication compresent with them. The possibility of every difference is given in the rational ground of that difference. But the possibility of a difference and the difference are not two different things. The rational grounds, however, of all possible differences are the primary categories. But the primary categories are non-temporal, therefore temporal conditions are not predicable of differences. But absolute novelty is described as a temporal condition. Hence absolute novelty is not predicable of difference or instances of difference. What meaning may be attributed to the term novelty, however, and in what sense it may be said to exist we shall examine after certain necessary preliminary considerations have been made.

7. It is by neglect of the logical presuppositions included in the proposed notion of absolute novelty that certain evolutionary points of view make their appeal as having metaphysical validity. Their adherents should be invited to describe the formal i.e. logical, characteristics of the universe which they seem to postulate and should be urged not to rest their point of view entirely on empirical data. All such appeals to empirical evidence, in questions of ontological interpretation involve either an explicit or suppressed construction of experience (Essay on Induction, par. 9). Where such a construction is present, however, any appeals to experience to verify the construction constitute a *petitio principii*. A relation arises much like that of a primitive and the sun. The primitive believes that the sun rises because he prays for it. Proof: he always prays for it and it always rises. In precisely the same way but with a superstructure of odd terms

the empiricist constructs his experience in such a way that it contains ostensible instances of absolute novelty and then with the triumph and flush of discovery points out that this or that combination of things contains something new.

8. The most fundamental kinds of difference are those termed essential and accidental. Essential differences pertain to the nature of a thing in so far as it participates in a given universal e.g. reason to man i.e. if man is defined as a rational animal; accidental differences, in so far as it has non-essential differences e.g. eye color or the number of hairs on the head. Essential differences constitute the nature of the thing and from them follow its properties. Hence we have a second type of differences, namely, radical and derivative. Radical differences are those differences from which subordinate or derivative differences follow. They are in the last analysis identical with essential differences. Where, however, two sets of derivative differences do not have a common radical they manifest, in relation to themselves, a difference in kind whereas their infra-differential relations are differences of degree. Difference of kind is essential difference; difference of degree is particular difference within a limiting universal. Difference of kind and degree are illustrated by the graduation of difference possible in conic sections. If a plane cuts a cone and is parallel to the base the intersection of cone and plane is a circle. If the plane is tilted the intersection forms an ellipse. As the inclination of the plane is progressively increased the major axis of the ellipse becomes greater. A continuous series of increasingly elongated ellipses is passed through. A point is reached, however, when the plane cuts the base and at such a point there is a definite change. If the tilting of the plane is continued the intersection assumes the form of a parabola. These definite changes of form represent differences of kind; the previous changes i.e. variations of the ellipse represent differences of degree. Another example is found in the graph of the tangent of a variable angle. The graph is asymptotic to the ordinate $\theta = 90^\circ$. It is finite until the argument reaches 90° and then jumps to infinity. In every instance of change from degree to that of kind there is a change in the

nature of the thing—much as water as it becomes colder and colder still remains water until a certain point is reached when it becomes ice. The difference of kind is represented by the change from liquid to solid.

9. Differences of kind are expressed as qualitative rather than quantitative. But these two species of difference are in truth aspects of the same kind of difference, namely, qualitative difference. The quantity of a thing is really a quality of it but only becomes essential when the thing is defined in terms of its quantitative properties. The reason for the distinction of quantitative from qualitative differences is the *ad hominem* convenience which emphasizes quantity because it is such a significant quality of a thing.

10. Strictly speaking all differences either of kind or of degree are called such according to the way in which the object possessing them is envisaged. The reason for this lies in the fact of the continuity of difference. Since degree merges into kind the merge is correlative to a dense number series in which there is no absolute relation of *next to* between the terms of the series. Differences of degree are only miniature differences of kind and differences of kind are ultimate i.e. all differences are variations of differences of kind. What is and what is not a difference of degree depends on the universe of discourse in terms of which the objects possessing them are considered. As this universe is restricted differences of kind increase; as it is extended differences of degree increase e.g. if our universe of discourse is all objects at 10° temperature then all objects not at 10° represent differences of kind; if our universe is all objects with any temperature at all then all differences in temperature in objects represent differences of degree. Differences of degree, however, are nothing other than differences in kinds of degree.

11. Quantitative difference is finite or infinite; infinite difference is unlimited or limited. Unlimited infinite difference involves infinite extension; limited the approach of an infinitesimal to a limit; i.e. an infinite series of finite differences has to be traversed before the limit is reached. The infinitesimal is an image of the whole manifold of differences in the realm of being.

Every difference subsists in a dense series of differences in which there is an infinite number of differences between any two given differences. Every point in this dense series is absolute in the sense that it is ineffaceable. It is absolute in the way that a natural number is absolute; not in the sense that it is free from all relations of dependence but in the sense that it is absolutely distinguishable from all other items. This absoluteness of difference constitutes the irreducible element of uniqueness in all individuals. No matter how completely any instance of being enters into a unifying whole of implication that continuity never overrides or destroys the difference which is essential to the thing. The coalescence of a thing in the whole of meaning, however, makes this difference, this uniqueness dependent on the whole and continuous with it.

12. The part-whole relation, in fact, is a species of the difference relation. It is not adequately treatable without a preliminary consideration of the category of dependence but the position which our previous study has led to is (1) that the part is a part because it is part of the whole i.e. its nature is determined by its relation to the whole; it is dependent on the whole and logically contradictory without it, (2) that the part, however, is none the less unique and indiscernible and not reducible to anything else. In other words the continuity and individuality of an item are complementary. Neither is understandable, nor logically possible, without the other. The part cannot be such if its uniqueness is retracted but it is only through its continuity with the whole, like a fraction in a convergent series, that it receives its nature as a differentiated something.

13. The dense series of differences in being is not revealed by perception since perception makes evident only differences of relative divergence. Perception gives a kind of chiaroscuro of the multitudinous realm of particulars, but, varied as it is, it only reaches a minute portion of the realm as a whole.

14. In the realm of quantitative difference we have the possibility of correlative correspondence of differences and this constitutes the possibility of measure. Measure is the one to one

correspondence between correlated sets of differences effected by a unit of measure which is assumed to retain relative uniformity. By means of measure the arithmetical constitution of things is rendered manifest. Nature is revealed as a complex of functions. Now the use of measure gives rise to a problem concerning the relation of quantitative to other qualitative difference. Qualitative difference is subject to degrees of intensity and these, like quantitative differences of extension may constitute a dense series. The question arises whether the variations in intensity are reducible to quantitative differences in the sense that they are identifiable with them. It is the continually reagitated question between physics and psychology as to which, if either, shall be primary. It may be illustrated as follows: if we take a glass of water and drop red wine into it the water will become progressively redder as the number of drops successively increases. Or if we take a number of grains of sugar, first put one in the mouth and then another and so on the sweetness becomes more and more intense as the number advances (i.e. within limits). Is the redness of the water or the sweetness of the sugar identifiable with the quantity of drops or the number of grains? The mere fact that we can distinguish the two is evidence that they are not. The qualitative difference is one unitary indivisible item; it is something unique in itself. The quantitative difference is not. There is, however, a precise correlation between them such that the one is a concomitant of the other. The intensity of the quality is, within limits, a function of the quantity but it is in no sense identical with it. The sense, therefore, in which a qualitative is said to be reduced to a quantitative difference is merely in this, that a functional relation is discoverable involving the two. This applies to all more complex cases where colors, sounds or other qualities are supposedly identified with length or frequency of waves.

15. While quantity is a species of differential relation, differences themselves are subject to quantitative determinations. The differences of things that are other than each other may be maximal or minimal. Maximal differences again may be qualitative or quantitative. With respect to the former two species are commonly employed, namely, contraries and opposites. Con-

traries are differences which are reciprocally exclusive and may be logical or physical. Logical contraries are constituted by classes which possess no members in common; physical by items which are antagonistic or mutually destructive such as acid and alkali. Opposites are constituted by items of widest difference within a given class e.g. as we previously indicated, black and white, where the class is that of colors. Judgments of opposites, however, are relative since there is no difference within a class which is necessarily greater than any other difference within that class. The concepts of the contrary and the opposite have played considerable rôles, sometimes by no means happily, in the development of thought. They have, moreover, not been as useful for investigation as the categories of minimal differences.

16. Items which differ in a maximum degree differ in all respects except in their participation in the primary categories of being. Items which differ in a minimal degree are alike in all respects except that they differ in number alone and such other differences as this implies. Those things which are indiscernible, not in a psychological sense, but in the sense that they are absolutely undifferentiated, are identical i.e. they are only spoken of contradictorily as a plurality, and plurality without difference is impossible. Thus every item possesses at least a minimal difference which constitutes its uniqueness and whatever is differentiated is distinguishable and whatever is distinguishable is unique. It follows from the identity of indiscernibles that whatever is, is unique.

17. Minimal differences may also be qualitative and quantitative. By the term minimal here, however, we do not refer to absolutely minimal differences for there are none such but to differences minimal in a certain set of relations. Any difference is subject to indefinite division into smaller differences. In the endeavor to reduce qualitative to quantitative differences, i.e. to interpret them as functions of quantitative variations, it was found that they are subject to fine degrees of variations, such, for example, as degrees of heat. In order to establish therefore a correspondence of these differences with quantitative differences the latter had to be diminished to a corresponding degree. This consisted in the division of extension into indivisible corpuscles

or atoms by which it was proposed to explain all nuances of qualitative difference. The theory of atomism whether in ancient form of the material atom or the modern form of the electron is the result of the endeavor to establish for minimal qualitative differences minimal correlated and calculable quantitative differences. And as long as observation of qualitative difference becomes finer and finer the correlated quantitative elements used by science to interpret these differences will become more and more minute.

18. We have lastly to indicate a relation the discussion of which it is necessary, however, for the present, to postpone. The relation we refer to is that between difference and mind. We have already seen that the relation of part-whole is a difference relation. There are, however, different kinds of wholes. Where the parts of a whole are undifferentiated the whole is an aggregate. Where they are subject to order i.e. coördinated, the aggregate becomes a system. A system which includes differentiated parts that are interdependent with respect to themselves and dependent with respect to the whole, is an organism. An organism in which the differentiation of the parts is complex such that the parts of parts are likewise differentiated but yet enter as complementary factors into the whole as a unifying structure, is a person. Now the order of organically combined differences in a systematic whole of differentiated parts constitutes a formal structure which is mind. Mind is the mathematico-logical aspect i.e. the implicative context, of an ordered set of differences.

19. We have, to continue, previously pointed out the presence of two sets of relational systems each of which we have designated as a kind of logic. The one is the logic of inference; the other is the logic of being. The one has to do with the discovery of concepts and their relations, classes and the inclusion and exclusion of classes; the other with the system of difference relations in the realm of being which makes such discovery possible. But as we have said the system of difference relations connected by the relation of implication is mind and hence the study of the meaning of the category of difference becomes, if carried to any adequate fullness, the study of the nature of mind. Mind

is the being of difference, itself differentiated but in its differentiations colligated by a unique type of relation. We shall endeavor, after we have considered certain other and essential characters of being, to investigate the nature and significance of this relation.

DEPENDENCE

1. By the positing of an item we mean the consideration of that item as being. By the retraction of an item we mean the consideration of the item as not being. By dependence we mean a relation between two or more items such that the positing of the one requires i.e. is contradictory without, the positing of the other and the retraction of the one requires the retraction of the other.

2. Now the relation of dependence may be reciprocal or non-reciprocal i.e. symmetrical or asymmetrical. In the latter case the one item is said to be prior to the other and the dependent item is said to be posterior to that on which it is dependent. What the nature of this relation is we may proceed to examine.

3. When the accidental qualities of one item are determined by another the former item is said to be *affected* by the latter. When the essential qualities of one item are dependent on those of another, the item is said to be *determined* by the thing on which its essential qualities depend. When one item is determined by another the first item requires for its being the being of the second. Determination is not genuine, however, unless it is complete. If any element in the essence of an item is not determined then the item is not determined. That determination only, therefore, which determines the essences of items is genuine and complete. But essences are universals. And the relations of universals are logical. Complete determination, therefore, is present only in a relation which is logical i.e. a relation in which the dependent or determined item is contradictory without that on which it depends. There is, therefore, one and only one kind of dependence, i.e. complete dependence, namely, that involved in logical relations. When one item is determined by or dependent on another the determined item, since it implies the item on which it depends as a presupposition, follows from that item. I.e. the positing of the determinant brings with it the positing of the determined as a logical consequence. It is always to be kept

in mind that we are referring to strictly logical and not hypothesized physical relations. Hence that relation between items according to which the one follows or logically issues from another i.e. the relation of descending implication, is one and the same with the relation of dependence. Strict dependence is the ontological content expressed in discursive thought as logical necessity. In the ontological context of relations thus indicated there are four primary types in which the property of dependence is fundamental, namely: the relation of universal to particular, the relation of particular to particular, the relation of universal to universal, and lastly the relation of universals and particulars as dependent items to that which is not dependent.

4. We have previously seen that the relation of dependence subsists between particular and universal. Particulars are dependent on universals. Retract the universal and its particular instances are retracted; posit the universal and *eo ipso* all possible, particular instances of it are posited. Now where two particulars participate in separate universals and where one of these universals is dependent on the other the particular instance of the dependent universal is dependent on the particular instance of the determining universal e.g. if the essence of a triangle presupposes the essence of an angle a given triangle will require a given angle for its being. Hence a dependence relation is present among particulars themselves which derives its force from that between particular and universal. Dependence relations thus arising among particulars prevail in unlimited interrelation in the whole realm of particulars. Not every particular, to be sure, is directly dependent on every other particular but every particular is directly dependent on some system of particulars which make up its essential antecedents. The being of particulars is thus interconnected by dependence and this dependence when the particulars are actual becomes evident in the relation of causation. We shall examine this relation more fully in the proper place, namely, in considering the nature of existent things. Here, however, we wish to indicate, (1) that causation is a species of dependence, namely, that which prevails between particular and particular and (2) that it derives its validity from the logical

conditions of being. The causes of a thing i.e. of a particular relational complex are determined by its essence. Whatever is necessary either to the being or the existence of the thing is so because it is involved in the essence of the thing.

5. Now we have seen that particulars are dependent on universals and that universals participate in an implicative nexus in which one proceeds from and is dependent on another. Our primary purpose in this essay is to examine the logical consequences of this nexus and in so doing we shall resort to the methods of formal analysis, namely, definition and deduction. We presuppose the axiom of deduction, namely, the law of non-contradiction.

Def. I. The terms of a dependence relation shall be called the principal and the dependent. By the principal we mean the term on which the dependent is dependent.

Def. II. By independence we mean absence of dependence, or, in other words, non-dependence. It follows that if an item is not dependent it is independent.

Def. III. By relative independence we mean the independence of a dependent item relative to an item that is dependent on it.

Def. IV. By absolute independence we mean the independence of an item that is dependent on no other item. That which is absolutely independent is absolute.

Def. V. By uniqueness we mean the differentiation of an item from every other item.

Def. VI. By uniqueness in a given property we mean the exclusive possession of that property by the item which is unique in it.

Def. VII. By an implier we mean a term from which another term follows and from which the consequent term can be inferred.

Def. VIII. By an implicate we mean a term which can be inferred from another term.

Note: By the terms implicate and implier in the present essay we mean terms which are connected with one another by direct implication. By direct implication we mean a relation of implication which, if transitive, is linear, i.e. which involves no collateral terms. E.g. if A is dependent on B, then A implies B directly; if C is dependent on B, then C implies B directly; but A does not imply C, nor C, A, directly, but indirectly.

Prop. I. An implier may be either a principal or a dependent since a dependent implies its principal and vice versa.

Def. IX. By a finite item we mean an item external to which (i.e. external to the item or to the descending implication it involves) there are other and hence different items.

Def. X. By the descending implication of an item we mean the implication which follows from and presupposes that item.

Def. XI. By appearance we mean that which considered in itself is contradictory, i.e. logically incomplete.

Def. XII. By reality we mean that which considered in itself is consistent i.e. that the essence of which requires the essence of no prior thing for its being.

Def. XIII. By intelligibility we mean that character of an item which permits i.e. renders possible, the being of a non-contradictory conception of it. We disavow that a false conception is a conception of that in respect to which it is false.

Def. XIV. By the completion of an item we mean the rendering of that item intelligible i.e. the supplementation of the item by that without which it is contradictory.

Prop. II. Every dependent item considered in itself is incomplete (by Par. I and Prop. III).

Def. XV. By immediate dependence we mean the dependence-relation between a dependent and a principal such that no other item intervenes between them on which the dependent is dependent.

Def. XVI. By mediate dependence we mean the dependence of a given item on a third item because it is dependent on a second item which is in turn dependent on the third item; or, in brief, mediate dependence is the intervention of dependent items between a dependent and a principal.

Prop. III. A dependent item implies a principal on which it is dependent (by Def. I).

Prop. IV. That which is dependent on another item is dependent on the item on which that item is dependent and so on indefinitely (by Def. XVI).

Def. XVII. By a transitive dependence-relation we mean a dependence-relation which passes from one principal to another principal.

Def. XVIII. By an intransitive dependence-relation we mean a dependence-relation which has only one dependent and one principal.

Def. XIX. By a symmetrical dependence-relation we mean a dependence-relation in which principal and dependent are interchangeable.

Def. XX. By an asymmetrical dependence-relation we mean a dependence-relation in which the dependent cannot be related as a principal to the principal and vice versa.

Def. XXI. By interdependence we mean a relation in which the dependent is a principal to its principal.

Def. XXII. Interdependence may be (1) symmetrical, in which case there is immediate dependence between each item and every other item in a set of items, or (2) circular, i.e. asymmetrical, in which case each item is mediately dependent on every other item but only immediately dependent on its own principal. Examples of circular interdependence are seen in some cases of causation e.g. in localities where men are dependent on animals, animals on vegetation, and vegetation on men; or again, in economic relations where the division of labor is dependent on the extent of the market, the extent of the market on the introduction and use of machinery, and the introduction and use of machinery on the division of labor.

Prop. V. Asymmetrical dependence is transitive unless the principal is independent (by Prop. IV).

Prop. VI. Interdependence is circular or not circular, and if the latter it is symmetrical, i.e. all the terms in the set of interdependent terms are connected by symmetrical dependence-relations (Defs. XXI, XXII).

Prop. VII. In any set of terms connected by mediate asymmetrical dependence only, there cannot be symmetrical interdependence; as is evident *per se* since if there is symmetrical interdependence the relation is not asymmetrical.

Prop. VIII. Circular interdependence cannot exist where the dependent terms are infinite since at whatever term the transitive dependence relation is taken it can never traverse an infinite number of terms to its origin.

Def. XXIII. By a series we mean a set of terms successively ordered by a given relation or by instances of a species of relation.

Def. XXIV. The elements of a series are (1) its terms (2) the serial relation which conjoins them (3) the realm of the series i.e. the range of difference as defined by a universal within which the series exists (any universal it is to be recalled implies for its being other universals) (4) the direction of the series i.e. the direction of the serial relation. Since the direction of a series is an essential part of the series a serial relation as such is (1) transitive and (2) asymmetrical.

Def. XXV. By the ordering of the realm of a series we mean the formal generation of logical relations within that realm. By the latter i.e. the formal generation of logical relations within a realm, we mean the incorporation of the items of that realm into the descending implication of an item on which they are dependent (cf. Def. X).

Def. XXVI. By a homogeneous series we mean a series the terms of which are alike except for their position in the series.

Def. XXVII. By a heterogeneous series we mean a series in which the terms differ by a difference other than that pertaining to their position in the series.

Prop. IX. Dependent items form a series (by Props. III, IV, V, and Def. XXIII).

Prop. X. No series is without a realm; since the terms of the series are instances of respective universals i.e. since they have determinate differences the difference involved in the series is determinate (by Def. XXIV).

Prop. XI. A heterogeneous series exhausts all the differences within its realm.

Any differentiated term within the realm enters any serial relation proper to the realm as a whole. If not then its differences prevent it from being in the realm, but this contradicts the hypothesis. Therefore a hetero-

geneous series exhausts all the differences within its realm. E.g. the series of natural numbers contains every natural number, or, if a number is a natural number, then it is in that series.

Prop. XII. Whatever is, falls into one or more heterogeneous series.

Since whatever is, is an instance of a universal it falls into the series of which that universal is the realm. Since, moreover, a thing participates in more than one universal it falls into the series of more than one realm.

Def. XXVIII. By a uniform heterogeneous series we mean a series in which the relation between any two terms is like that between any other two terms.

Def. XXIX. By a differential heterogeneous series we mean a series in which the serial relation between successive terms is like in genus but different in species e.g. the series of prime numbers.

A further example of a differential heterogeneous series is the following: the volume of a cone of given altitude depends on the area of its base and the area of the base depends on the magnitude of its radius. The relation between volume and base is a relation different from that between the radius and the area of the base and is expressed by a formula different from the formula which expresses the latter relation. Both, however, are dependence-relations.

Prop. XIII. A dependence series is a differential heterogeneous series.

The terms differ since that which follows from an item, namely, a dependent item, differs from that from which it follows.

The relations differ since the dependence-relation between the two given terms issues from the properties of the terms and where the terms differ the dependence-relations differ as in the example in the previous propo-

sition. If C is dependent on B, and B on A, and C, B and A are not homogeneous items, the dependence-relation of C on B is a resultant of the properties of B; that of B on A is a resultant of the properties of A.

Def. XXX. An infinite series is a series with an infinite number of terms.

Def. XXXI. A finite series is a series with a finite number of terms.

Prop. XIV. No differential heterogeneous series is finite.

A heterogeneous series exhausts the differences of its realm (by Prop. XI). But from every realm follows an infinite number of differences i.e. from every universal or essence follows an infinite number of instances. Hence no differential heterogeneous series is finite.

Note: Since our concern here is with being and its modifications we consider any arbitrary limitation of a series by definition as invalid e.g. the series of numbers from one to ten. This series is obtained simply by ignoring the balance of the number series. All such series we call fictitious as opposed to series in the realm of being which we call ontological. I.e. any proposed limited series the limits of which are not given as such in being we call fictitious; or, in other words, if any terms taken at random in a series are related to other terms, not postulated as being in the series, by a relation which is an instance of the serial relation, then those terms are not extremities or termini of the series (cf. Prop. V).

Def. XXXII. By a limited series we mean a series which is determined by a definite realm, i.e. by a realm outside of which the differences involved in the series do not extend.

Def. XXXIII. By an unlimited series we mean a series not determined by a definite realm but by a realm which

leaves the range of difference involved in the series undetermined.

Prop. XV. An infinite differential heterogeneous series cannot be unlimited since no difference or no realm can be outside of being as is evident *per se*. But any realm within being is limited by other realms.

Prop. XVI. An infinite dependence series cannot be unlimited. (by Props. XIII and XV).

Prop. XVII. No serial realm is independent whose essence involves a prior realm (by Par. I, Prop. III and Def. II).

Prop. XVIII. Serial realms themselves form a differential heterogeneous dependence series (by Def. XXIV and Prop. IV) which is infinite (by Prop. XIV) and not unlimited (Prop. XVI).

Prop. XIX. The dependence-series of serial realms comprehends all other dependence series (by Prop. XI) and hence every dependent item and every finite item (by Prop. XII) and hence is single. I.e. there is one only ontological dependence series in the realm of being (cf. Note. Prop. XIV).

Def. XXXIV. By the primary dependence series we mean the single dependence series in the realm of being.

Def. XXXV. By an independent whole we mean a whole whose being does not require the being of any other thing.

Def. XXXVI. By a dependent whole we mean a whole whose being requires the being of some other thing.

Prop. XX. The parts of every whole are dependent; since it is contradictory that there can be parts without a whole.

Prop. XXI. Every whole of dependent parts is dependent if any of the parts is dependent on something not included in the whole; as is evident *per se*.

Prop. XXII. Every whole of dependent parts is dependent unless the parts are interdependent (by Prop. XXI) since if the parts are not interdependent they are dependent on something not included in the whole.

Def. XXXVII. A composite whole is a whole in which the order of the parts is not a serial order.

Def. XXXVIII. A serial whole is a whole in which the order of the parts is a serial order.

Prop. XXIII. If the parts of a composite whole are related by interdependence, the interdependence is not circular (by Def. XXXVII), since if it were, the parts would be serially related, but this contradicts the hypothesis.

Prop. XXIV. If the parts of a serial whole are related by interdependence the interdependence can be circular only (by Defs. XXXVIII, XXIV, and Props. VI and VII).

Prop. XXV. The primary dependence series constitutes a serial whole (by Def. XXXVIII).

Prop. XXVI. The serial whole of dependence is constituted of infinite parts (by Prop. XVIII).

Prop. XXVII. The parts of the serial whole of dependence i.e. of the primary dependence series, are not related by circular interdependence (by Props. XXVI and VIII).

Prop. XXVIII. Therefore this whole is a dependent whole: its parts are dependent and not interdependent (by Props. XXII, XXIV and XXVII).

Prop. XXIX. A dependent whole implies a principal (by Prop. III).

Prop. XXX. Therefore the serial whole of dependence i.e. the primary dependence series, implies a principal (by Props. XXVIII and XXIX).

Prop. XXXI. This principal is not dependent; since if so it would be part of the primary dependence series (by Prop. XIX).

Prop. XXXII. Therefore it is independent (by Def. II). Therefore there is an independent item.

Prop. XXXIII. The independent item is unique in its independence.

Assume that there is another independent. Then it is either related or not related to the independent. But if it is not related to the independent then it is not different from the independent for difference is a relation. Hence it is not another independent. But this contradicts the hypothesis. It must, therefore, be related to the independent i.e. it is contradictory unless so related. But its being then is determined by this relation (Par. 3). If its being is so determined, however, it is not independent (by Def. II). But this again contradicts the hypothesis. Therefore (1) there is not another independent, (2) the independent is unique in its independence (by Def. VI), (3) the primary dependence-series is dependent on the independent (by Prop. XXX and Def. I).

Note: There are two topics regarding this proposition which it is desirable to consider: (1) that the independent is a logical item (2) that a cognition of it is not accessible to analogical thinking.

1. It must be borne in mind that dependence is a logical category (Par. I). It rests on the principle of consistency. Any

dependent item if considered outside of its dependence is contradictory. This means on the linguistic side that any verbal expression which negates the given dependence is without content; on the ontological side that the relation cannot be otherwise than it is. The coherence, implied by the law of non-contradiction, ordering as it does all items of being, envelops within its scope a dependence-series which is at once necessary in thought and invariable in being. The non-temporal and formal linkage of essential structures in this series is logically generated and determined by the independent. By no stretch of conception can the independent be identified with, or illustrated by, any physical or finite thing. No physical thing, as such, orders or can order a formal manifold of essential structures by the necessity of its logical influence. Until the independent is conceived as the center of a relational nexus constituted by the kind of consecutive relations which determine that a quadratic equation shall have at least one, and not have more than two roots; or that of all polygons with sides given, that which can be inscribed in a circle is the maximum; or that the tangent of a circle is perpendicular to the radius at the point of tangency, any proposed account of it must remain essentially irrelevant. The independent is not *a thing* in any common usage of that term.

2. Customary reasoning is analogical reasoning and by analogical reasoning we refer to that type of reasoning which, by the comparing of one thing with another, distinguishes their similarities. The type-form of this kind of reasoning is as follows: A is like B, C is like B, therefore C is like A; from this it is inferred that what is true of A is true of C. This form of conclusion obviously lacks universal applicability but is nevertheless effective in numerous instances of common life. It is for this reason not detrimental enough in practical affairs to be discarded. When a new and unaccounted for phenomenon appears it is generally incorporated into thought by the comparison and likening of it to something which is familiar. If the analogy is essentially applicable i.e. if the essence of the new is like the essence of the old, the conclusions which are essentially valid for the one are valid also for the other, and analogical thinking, in

such cases, is successful. Analogy is thus the method employed by customary thinking for the reduction of the unfamiliar to the familiar. In so far as it accomplishes this end it produces a conformation of the novel in phenomena to the habitual in the attitude of the thinking subject.

This habitual attitude, however, is associated with notions of substantiality and feelings of certainty which commonly lend an emphatic but illusory sense of concreteness or obviousness to the conclusions of analogical thinking. The reduction of a thing to the familiar by this process is often, instead of the attainment of valid certainty, merely the obfuscation of the thing. That which is essentially different from the familiar is only falsified by being identified with it. But by the apparent reduction of a thing to the familiar the above-mentioned illusory sense of concreteness is, for the most part, generated. Nothing was more obvious and appealed more to the sense of concreteness of the ancients and mediævals than the notion that some impressed force was necessary to move heavenly bodies in space; everything on earth obviously required an impressed force to keep it moving. They made, by thinking in this way, the unfamiliar familiar but in so doing misinterpreted it. Believing, moreover, that they understood, but not truly understanding the familiar, they not only misjudged the thing itself but the unfamiliar as well.

The point of significance in this is that the reduction of a thing to the familiar is neither a necessary nor a logical process. The feeling of familiarity and the attainment of understanding are two different items. There is no logical reason why all things must be essentially like those things with which any set of finite knowers is familiar. The sense of concreteness arising by an appeal, through the process of analogical reduction, to the habitual attitude of such knowers is not free from elements of apparency which are subtly and radically misleading. This is particularly relevant to the thinking of humans about primary or ultimate categories. Since men are overwhelmingly habituated to the consideration of the finite and the dependent it is only by an unusual readjustment of thought that they can be induced to refrain from misapplying the characteristics with which they

are familiar in these things to the infinite and not dependent.*

Now analogy in customary thinking endows itself with a considerable number of forms. Three of these particularly concern us.

First, whatever is envisaged is envisaged by selection out of an environment which is external to it. Hence whatever is thought of, is thought of as having something outside of itself. This is true whether one is thinking in spatial terms or not e.g. in thinking about an emotion or a memory. We shall call this type of analogy, i.e. that which considers everything as having something external to itself, the analogy of externality.

Secondly, since customary thinking is nothing but the reflection in thought of habitual experience there is a tendency (which is exceedingly strong) to think of one thing always as one of a number. Whatever thing is perceived and considered as one, is perceived as one of a number of things more or less like it. Hence an expectation of plurality is insensibly established, so great in its force, that scarcely anyone ever entertains the notion that he might possibly perceive something not as one of a number of things. How ingrained the tendency is anyone may discover for himself, simply by endeavoring to think of anything i.e. any particular thing, without thinking of any other thing with which it is associated. It goes without saying that whatever is imagined as a concrete thing is imagined in some kind of an environment. The thing is thought of in terms of its resemblance, its difference, its connection and its continuity to other things and it brings them with it in a cluster. Take away the cluster, however, and then either the thing vanishes as an object of imagination or another cluster is substituted. The type of analogical thinking which arises from this tendency i.e. which considers one thing as always one of a number of things we shall call the analogy of plurality.

Lastly, that which is envisaged by customary thinking is envisaged as apart from and external to the subject. Even when

* A striking example of the difficulties engendered by the illicit endeavor to reduce the unfamiliar to the familiar is presented in the arguments of those who endeavored to show that the dx and dy of differential calculus were minute quantities, i.e. concrete infinitesimal units.

bodily organs are thought of they are thought of objectively and as related to the subject by outside bonds. There is a tendency, in other words, in the perception of things for the subject to isolate itself and to make the self different from and independent of that which it considers. A confrontation is established between the individual and other things and the things so considered are regarded as apart from and alien to the subject. Owing to this kind of epistemological bifurcation which the perceiving subject continually and inadvertently erects in its contemplation of objects, we shall call this type of analogy the analogy of subject-object dualism, or, for short, the analogy of dualism.

All of these species of analogy are prejudices deeply rooted by repetition in the habitual beliefs of the individual. None of them is logically necessary as applied to all subjects of reference. There are some things they do not refer to. They express primarily, as is evident from their psychological character, the nature of man, not the nature of things. They have, however, this source in common which contributes to their tenacity, namely, they are all derived from the perception of physical things in the world of space and time. In this world perception is determined by the conditions: (1) that each physical thing is surrounded by an environment (2) that each physical thing is perceived, if perceived, as one of a number of things, and (3) that each physical thing is considered as other than and distinguished from, the perceiver i.e. it is considered as an external thing.

The question now arises: what relation do these types of analogy bear to the cognition of the independent?

It is evident that the independent is not comprehensible in terms of analogical reasoning since it is unique and not essentially like any of the finite things to which it may be compared. First, it is that outside of which nothing can be or be conceived i.e. it is without externality (by Def. IX and the present Proposition). Hence it is not subject to the analogy of externality.

Secondly, it is not one of a number—nor one at all in any

customary sense—but is unique (by the present Proposition). Hence it is not subject to the analogy of plurality.

With respect to the psychology represented in this type of analogy certain further comments are not out of place. When it is said that there is only one of a thing (1) it commonly seems, as we have said, that the item must be one of a number and (2) it seems as though, in the predication of uniqueness to it, other relevant things are simply ignored. Now just as to some temperaments it is incredible that the world can be intelligible although they imply the intelligibility of it in all their thinking, so there are some temperaments to whom it is incredible that there can be a thing which is, in a significant sense, only one and not one of a number. It is true that the independent is *only one* in a sense that nothing else is *only one* for it is that and that only which has no externality and which includes in its implication everything that is. But the uniqueness of the independent in this respect is not something esoteric or mystical. There is nothing, it is true, to which it can be compared in its uniqueness. But the demonstration and discernment of its uniqueness is not to be identified with the uniqueness itself and there are many examples of such demonstration and discernment of things which in a more restricted sense are *only one*, i.e. they are only one of a kind; the postulation of more than one involves a contradiction. The number of these things is so great that we shall cite only a few of them. There is only one perpendicular from an external point to a straight line. (Euclidean Geometry is understood in this and the following theorems.) Three points not in a straight line determine the circumference of one and only one circle. Of all isoperimetric polygons there is one and only one which is maximum in area, namely, that which can be inscribed in a circle. Of all triangles with two sides given there is one and only one which is maximum, namely, that which is a right triangle. One and only one circle can be inscribed in a triangle. An algebraic function in one variable has one and only one derivative. Many more such theorems could be cited, taken either from mathematics or any other field of being, since in fact any particular thing is, if taken in its particularity, *only one*. The fact, in sum, that it *seems* as though there should be a plurality or an

unlimited plurality of items of a given qualification can in no sense be taken as a logical ground for the notion that there is such a plurality. It *seems* as though there could be an unlimited number of regular solids in the same way that there is an unlimited number of regular polygons but there are, in fact, only five.

Thirdly and lastly, the independent cannot adequately be considered under the analogy of subject-object dualism. Its reality lies in and through the thinking subject—it is that which the subject itself, in order to be, presupposes. Hence it can neither be thought of as apart from i.e. separated from the subject nor can the subject be conceived except as dependent on it. If the subject sets himself outside of and apart from it he conceives himself as independent, but this is contradictory. The independent is, therefore, not representable through the analogy of dualism. The self of the independent includes the self of the subject and if the subject endeavors to separate himself, in thought, from that self, then in fact he does nothing other than endeavor to separate himself from himself—a process which he will find anything but satisfactory.

Prop. XXXIV. The independent is the source of intelligibility in the whole.

The descending implication of an essence orders, by the structure of the dependence-relations which it determines, the serial realm of that essence (by Def. X, Prop. XIV and Def. XXV). But a realm can order that series alone which is dependent on it (by Defs. X and XXV). Therefore no finite realm can order the primary dependence series (by Props. XIX, XXXI and Def. XXV). No finite realm, however, is complete in itself i.e. every finite realm considered in itself is dependent (by Props. XIX and II) and hence contradictory (by Par. I) and therefore unintelligible (by Def. XIII). Hence every finite realm implies for its intelligibility another realm. But the logical completion or integration of a dependent realm is not possible by another dependent realm since that is itself incomplete (by Prop.

III). Therefore that alone without which the completion of any dependent thing is contradictory is the independent (by Def. XIV). Hence the intelligibility of everything within the realm of any series as well as the intelligibility of any serial realm itself is dependent on the independent (Prop. XXXI and Def. XIII). I.e. the independent is the source of intelligibility in the whole (Prop. XXXIII).

Prop. XXXV. The independent is absolute reality.

Every finite thing considered in itself and apart from its implication is unintelligible (by Props. XIX, III and Def. XIII) and therefore an instance of appearance (by Def. XI). Every finite thing, however, presupposes for its ontological completeness, and therefore implies, the independent (by Props. I, IV and XXXIII). The independent, therefore, is that and that alone which is both implicate and implier of dependent things (by Prop. XXXIII and Prop. I). It is, moreover, that, the essence of which, requires the essence of no other thing, i.e. it is that and that only which is self-consistent (by Prop. XXXIV). Hence it is real (by Def. XII) and since it is unique in its independence (by Prop. XXXIII) it is absolute (by Def. IV). The independent therefore is absolute reality, which was the proposition to be demonstrated.

Note: From the foregoing propositions certain significant corollaries ensue which we shall endeavor to enunciate in the following paragraph.

A thing, apart from its implication is nothing. The perception of things without the perception of their implications is possible only because the things already are i.e. because they exist in conjunction with their implications. Thus (1) whatever finite thing is, may, if considered outside of its implications, give rise to appearance; (2) appearance is unavoidable in finite cognition for the infinite implication of anything cannot be cognized

by a finite organism; (3) appearance is a relation arising from the necessary limitations of finite knowers and is not included in the essences of things themselves; (4) appearance is impossible in the independent since the independent is at once the implicate and implier of every dependent thing; (5) the implication of the independent is the whole of meaning i.e. it is the realm of being and includes the content of all reference.

It remains to recall (Essays on Truth and on Being) that participation in the whole of meaning is, on the ontological side, being; on the logical, truth. These two categories are, in fact, one and the same. In their exfoliation through the logical consecution of differences which emanate from the independent and form the context of universal mind i.e. the mind of the independent (Essay on Difference, paragraphs 18 and 19) they follow the nexus of dependence-relations which are, in the totality of their extension, the realized power of that mind in things i.e. which constitute the category of necessity in any finite realm of being.

EXISTENCE

1. The first concern of philosophy in treating a realm of being is to render that realm precise i.e. to state its differentiation from the rest of being. We shall proceed, therefore, to do this for the realm of existence. Having attained this end the remainder of the present essay and the body of subsequent essays will treat of the elements, the properties and the structure which the realm of existence possesses.

2. By existence we mean the being of particulars. By a particular we mean a finite item which has no instance, or, less accurately, whose only instance is itself. Now items other than particulars participate in being e.g. universals and their relations. But, by definition, particulars only exist. Existence is their realm. Every particular is an instance of existence and conversely every instance of existence is a particular.

3. We have seen, however, that particulars are dependent things. Their dependence follows both from their logical status (Essay on the Universal and Its Relations, par. 3, III) and from their relational character. They are nothing apart from their implications but their implications lead on into another nexa. Dependence however, is the mark of appearance (Essay on Dependence, par. 1, Def. XI, Prop. XXXV). Hence the realm of existence is a component of the realm of appearance. Neither the realm of existence as a whole nor the objects in it if taken by themselves are intelligible. The domain of existence considered in itself is a world of shadows.

4. The degree of dependence, nevertheless, which pertains to particulars is not equal for all. By degree of dependence we do not refer to relations of more and less in a qualitative sense as applied to dependence any more than we should say that a thing, with respect to another thing, is more or less equal. We mean simply that the number and kinds of things on which a dependent thing is dependent may be greater or less and of that which is dependent on a greater number of other items we say

the dependence is greater and of a lesser less. Some particulars, in this sense, are more dependent than others. Now a particular which involves a relation which adds to its dependence is to that extent less real than others not so qualified. There is hence a distinction within the realm of existence itself between real and apparent particulars. This distinction we shall presently treat. Before doing so, however, it will be necessary to examine into the nature of existent things and to consider especially the significance of relations and events with respect to particulars.

5. The character of the category of relation we have already considered (Essay on Relation, pars. 2-13). A relation is organic and coalescent. The terms of a relation are themselves relations which are constitutive of other terms and so on indefinitely. The coalescence of terms thus established gives rise to a context of particular relations and a context of particular relations is a situation.

6. There are as many differences and terms in a situation as it has component relations. Since, however, these are infinite any given situation may be divided into an indefinite number of subordinate situations. Owing, however, to the absoluteness of difference (Essay on Difference, par. 11) any given situation, although a plurality, may be considered as a whole. Now a situation of particular relations considered as a whole is an event. An event is a relational unit defined by a situation. Any situation whatsoever constituted by particular relations in any sphere of the realm of existence is the delimitation of an event.

7. From this conception of an event we are led to a group of cognate definitions the validity of which we believe will be evident in the definitions themselves.

A plurality of events connected by a serial relation is an event-series and an event-series is a history. But an event-series is a context of particular relations and a context of particular relations and only a context of particular relations is a particular (Essay on Relation, par. 22). Hence a particular is a history. It is an event-series and is not to be thought of as an isolated ponderable substance. It is a system of relations.

8. We have seen (Essay on the Universal and Its Relations, par. 3, V) that every universal whose exemplifications are par-

particulars generates an infinity of particular instances. The conditions for the existence of these particulars, the difference relations which divide them into discrete items, are determined by the universal. The whole range of particular instances thus determined is the realm of existence. But each constituent particular of that realm is a history. The realm of existence, therefore—and this is a point of primary significance—is an infinite complex of histories.

9. Let us now return to the distinction between real and apparent particulars.

A real particular is a particular which exists independently of cognition.* Such a particular or history holds its status in being whether it is cognized or not. It is part of the implication of the independent and hence logical, ontological and non-temporal. It can no more not-be than the number four or any other number can not-be. The appearance of a real particular in a cognitive relation contributes nothing to its reality. It is unessential to it. It is an addendum, rather than a constitutive relation. Cognition, in other words, enters the essence of no real particular. This follows directly from the character of the universal and from the nature of being as the whole of meaning. It may also be observed here, although not as an argument—since there are demonstrations of a logical and not suppositional character which go right to the point—that common experience confirms this position. If we witness an eclipse of the sun we are perfectly aware that our witnessing of it is a relation involved in the whole situation which is not essential to the eclipse as an eclipse but rather to our seeing it. Or again we are perfectly aware that if, in our absence, an accident occurred the accident was an accident regardless of the fact that we did not happen to be included in the system of relations which constituted it. We are led, however, by these considerations to an inquiry into the nature of apparent particulars.

* By the term real as here employed we obviously do not refer to the absolute reality of the independent. Nothing is more removed from this than the particular. We refer simply to the existence of the particular as independent of the cognitive relation. This usage is valuable and convenient owing to the problems of objective existence concerned with that relation.

10. By an apparent particular we mean a particular whose essence involves a cognitive relation. Such particulars are distinguished by that relation from other particulars and the enunciation of the distinction is the definition of them. To their nature as particulars, however, the relation is not essential. Just as we say that a sunken and invisible ship if raised to the surface becomes visible so a real particular if it enters cognition may become an apparent particular. It clearly cannot be apparent unless it appears but because it appears it is none the less real. Reality and appearance as applied to particulars are not opposite but supplementary characters. They are not mutually exclusive although they are not necessarily coincident. A particular *may* be both apparent and real. All apparent particulars, in fact, are real although the simple converse of this is not true, namely, that all real particulars are apparent. There is an infinite realm of particulars which is not cognized.

There are, nevertheless, certain differences between perceived and unperceived particulars which arise from the conditions of perception inherent in finite things. The essential nature of these differences we shall consider in a later essay. It is to be said here, however, that they are sufficient to give apparent particulars a status distinct from that of other real existents.

11. Now whatever is non-contradictory with itself and is consistent with the whole of meaning is possible, and only such things are possible. We refer here, of course, to fundamental or ontological possibility not the relative possibility of being in this or that restricted class, although the same conditions hold also for such possibility. But whatever has existence has particular being (par. 2). It participates in the whole of meaning and receives its intelligibility, as a dependent thing, from the independent (previous essay, Prop. XXXIV). It is, therefore, non-contradictory with itself and consistent with the whole of meaning i.e. it is possible.

It follows that all possible particulars exist. There is no such thing as a non-existent particular. In the same manner that the slopes of all the tangents of a curve are given in the formula for the derivative of the function of that curve the realm of particulars is generated and completed in the stream of possibility

which issues from the independent. The possibility of a particular and its being are one and the same thing.

12. This possibility is, moreover, non-temporal and ineffaceable. It is not subject to time. It is mathematical in its character—just as the possibility of an infinite number of different squares which follows from the relations that determine the nature of a square. It cannot properly be said to be either mutable or permanent; it is outside the connotative reference of temporal categories. It is an item in the implication of the independent and this implication—contained in and compresent with its implier—is not subject to the relations of *before* and *after* i.e. it is not subject to time.

13. We have seen, however, that the character of a particular which constitutes its reality is its independence of the cognitive relation. By this independence, it is needless to say, we do not mean its exclusion from or its incompatibility with that relation. We mean that it possesses a status in being whether that relation is present or not. The reality, therefore, of a particular and its non-temporal possibility are identical. The realm of possibility and the realm of real particulars are coincident. The infinite complex of histories—for particulars are histories—which constitutes the domain of existential possibility is one and the same with the domain of real existents.

CAUSATION

1. Causation is a relation between particulars such that the existence of one is dependent on that of another. Dependence we have already defined.

This definition requires comment. A particular we have seen is a relational complex i.e. a situation. A cause, therefore, is a situation on which another situation depends. Now a situation is made up of relations which may be called conditions. A situation which is a cause contains by definition all the necessary conditions of the dependent situation i.e. all the indispensable factors to produce the effect. Otherwise the effect is not dependent on it. But if all the factors indispensable to the effect are present then the effect is present. Clearly if the effect is not present some factor indispensable to its existence is not present in the causal situation. It is important to see this. If one indispensable factor is deleted from the cause the effect is cancelled. Hence none of the other factors have causal validity or are causes. A cause, therefore, is a situation which contains all the indispensable factors to condition an effect and these factors are only causal factors as they are organic parts of the whole causal situation.

Thus it cannot be objected that, although an effect depends on the particular which is the cause, the presence of the causal particular does not necessitate the presence of the effect. There is no privileged factor—every indispensable factor is a component of the cause. This is significant because it may be remarked, for example, that though fishes are dependent on water, if water is present fishes are not necessarily present. But this proposition is not accurately stated. Fishes are not dependent on water, but on water in relation to a number of other things and these relations are absolutely essential. The fallacy here is one of illicit substantialization (*Essay on Relation*, par. 45). A particular instance of water, like other particulars, is nothing outside of its relations. In other words fishes are dependent on a

situation and that situation involves all indispensable terms, including a particular instance of water, for the existence of the effect. An instance of water in another situation is not indispensable to fishes at all e.g. water on Mars. On the other hand if water together with the other indispensable factors i.e. if the whole situation, namely, the cause as such is present, fishes are present. What the nature of the indispensability to which we refer is, we shall presently see.

2. Every quality of a particular is itself a particular.

A quality is a relation and a particular is a relational complex. But the terms which are components of the relations are themselves constituted of relations i.e. every quality is itself a particular.

3. Every degree of every quality is a quality itself, hence a particular.

This follows for the same reason as 2.

4. A particular which determines the quality of another particular is either the cause or an element in the cause of that particular. Or a particular which determines the degree of a quality of another particular is a cause of that particular.

Since if a particular does not have the caused quality or the degree of the quality it is another particular. A is a cause of B if the retraction of A involves the retraction of B, of any quality of B, or of any degree of any quality of B. The retraction of either of the last two items is equivalent to that of the first. Therefore, not only every particular but every modification of every particular has a cause.

5. By the efficacy of causation we mean the necessity which combines a particular as cause and a particular as product i.e. as effect. It will be our object in the following proposition to show wherein this efficacy lies.

6. The efficacy of causation is determined by the relational character of a particular and by the relations between a particular and the universal to which it belongs.

First as to the relational character of the particular, It is

essential to grasp the nature and significance of this point. It is owing to the lack of such grasp that causation is denied since it is fictitiously interpreted as a relation of isolated or discrete substances. The possibility or rather impossibility of supporting this view, however, we have already treated (Essay on Relation, par. 31). If substances are assumed as unrelated it is a priori impossible ever to give an intelligible account of them as related.

Now a particular is a relational complex. It cannot be defined or described outside of its relations. The peculiarity of its relations make up the peculiarity of the particular. Outside of its relations it is nothing and has no existence. A mountain is not a mountain without a valley, a hand is not a hand outside a body, a book is not a book except in relation to a reader, a piece of food is not food without an eater, a planet is not a planet outside of a solar system, and so on for every particular thing. Hence a particular to be comprehended must be comprehended in its relations.

Of these relations, however, some are essential and some not essential to the character of the particular. Every particular, furthermore, is an instance of a universal. And the universal characterizes the particular i.e. the universal determines the relations which constitute the essence of the particular. It, therefore, determines the relations without which the particular cannot be (e.g. as we have said, a hand outside a body is not a hand. The relation to the body is essential to the nature of the hand). When, therefore, the essence of a particular is involved in, or requires another essence, the instances of the first essence require for their existence instances of the second essence, i.e. a particular hand to be such requires a particular body to which it is related. Every particular which participates in a universal is dependent on other particulars which that universal determines for it.* But as we have seen, every particular participates in a

* E.g. a carnivorous animal is unintelligible without meat and a particular carnivorous animal without a particular instance of meat for whatever the carnivorous animal eats or may eat it is not the universal *meat*. The existence of particular carnivorous animals is determined by the existence of particular instances of meat. Now it may be said: assume no carnivorous animal exists, what then? We believe that we have already treated objections of this nature, namely: whatever is possible exists and whatever exists is a possible particular (*Essay on Existence*, par. 11). The possibility of an item is non-temporal and ineffaceable

universal. Therefore every particular is determined for its existence by the existence of other particulars which are its causes. It is contradictory to speak of an uncaused particular because such a particular would both have and not have essential relations, would both be and not be an instance of a universal. Otherwise stated, every particular which is an instance of a universal is a caused particular in that it is dependent on other particulars which its universal conditions for it. But every particular is an instance of a universal. Hence every particular is determined by causation.* But any modification of a particular as we have seen is itself a particular. Hence not only every particular is determined by other particulars which are its cause but every modification of every particular is likewise subject to causal existence. Hence a particular is completely determined.

and is its real existence. *A possible* is not a *nothing* or, to put it in other words, those who do not distinguish a *possible* from a *nothing* live in a world in which nothing is possible. If on the other hand it is not a *nothing* it is a something i.e. some particular thing. If, however, it is some particular thing it has an essential nature and essential relations determined by that nature, with other particular things. But if it is determined by essential relations with other particular things then it is caused by those things and impossible without them with the same kind of impossibility that makes it impossible for a number to be unequal to itself.

* This applies to any particular whatsoever whether possible or actual—whether subatomic or superatomic. Science, since it is limited to empirical methods and since only a relatively few particulars are accessible to research by these methods, is not in a position to demonstrate either determinism or so-called indeterminism among particulars. In any case before it can give any support to the latter i.e. to indeterminism, it is obliged to demonstrate a priori its intelligibility and hence its possibility. The mere assertion that statistical averages cover minute uncaused motions in electrons is neither within the range, nor is it worthy, of science. Ignorance of the particular minute motions which are imagined to produce the statistical averages in reported data does not give any justification for the assertion that they are uncaused—on the contrary it removes any empirical grounds to make assertions about them. Caused or uncaused the motions of the electrons would give rise to statistical averages—the latter i.e. the averages, cannot, hence, be legitimately used as substitutes for the relation of causation although they may satisfy certain scientists. For the type of validity attaching to scientific generalization cf. *Essay on Science*, pars. 36 and 37. No utterances, however, which are unintelligible i.e. contradictory, are valid whether they are called scientific or not. If the argument we have here presented for causation is true then it is impossible to conceive logically i.e. to conceive at all, an uncaused particular. The particular is a non-temporal nexus of particular relations. Given these relations the particular is—remove them and it is removed. I.e. the particular is a caused and determined item. But it must be borne in mind that we refer, by the term *cause*, to something entirely different from the item posited in the common scientific notion, which sees in cause a temporal conjugation of physical units. Cf. *Essay on Science*, par. 32.

Now by way of comment on this exposition we wish to say that it is not presented as a mere suggestion nor as a reserved and hesitant hypothesis—it is presented as a demonstration.

Accept the premises (1) that every particular is an instance of a universal (2) that therefore every particular has essential relations and without these relations ceases to be, i.e. to be that particular particular (3) that contradictory expressions are meaningless i.e. do not apply, as contradictions, to being, then it follows (1) that a particular is dependent on and determined by its essential relations with other particulars (2) that every particular has such relations (for if not it would not be as a particular an instance of a universal) and hence every particular is dependent on, and determined by, its relations with other particulars i.e. every particular is caused. But since the parts of particulars are particulars every part of a particular is likewise caused. But if a particular is caused and every part of the particular is caused then the whole particular is caused. E.g. a nitrogenous plant, in so far as it is such, not only depends on the universal *nitrogen* but immediately on a particular instance of nitrogen. If not then it is not a nitrogenous plant but this contradicts the definition. But, it may be objected, this is only a definition; it is not necessary to define a plant as nitrogenous. Right, but you have got to define it as something—i.e. whether or not you define it in words, the plant is differentiated in being from other particulars or else it is not nitrogenous or a plant or any particular at all. Being differentiated as a particular, however, from other particulars it has every particular relation without which that differentiation is contradictory. If it has every such relation, however, it *is*, for if it lacks anything at all necessary for its being, then that which it lacks must be essential to it, since if it were not, the absence of it would not retract the being of the thing; in short, a particular, to exist, can lack none of its causes and on the other hand if none of its causes is lacking, it is.

Lastly, it may be objected that the considerations here involved are logical, not physical. But that is precisely the point of the present exposition. Just because they are logical they are prior, antecedent and presuppositional to anything that physics can offer. Any necessity which physics has to present is condi-

tioned by, dependent on, and simply a special instance of, logical necessity. The whole of physics, in so far as it is a science and not an arbitrary collection of statistics is a system of mathematics and the only bond that holds any mathematical system together is a logical bond, namely, consistency. And consistency and logical necessity are one and the same thing. Physics, or any other science, in so far as it becomes a science becomes an instance of logic. And logic is fundamental. Physical, chemical, psychological necessity is only necessity in so far as it is logical necessity—if not then instances of such might be other than they are; but this is not necessity. There are, it is true, subtle physicists who say that they are unconcerned with the consistency of their hypotheses—or with the contradictions they may contain—only provided that they agree with experience;—but what is the meaning of the term *agree* in the phrase “agree with experience” if not consistency i.e. consistency with experience? Put in other words, the propositions must not contradict experience. Why, however, should a proposition which is consistent with experience be any more valid than a proposition which is not consistent with experience. The answer is: for one reason and one reason only, namely, that the principle of consistency is presupposed. Without the presupposition of that principle there is no meaning to the word *agree* at all. If the principle of consistency is not presupposed then everything both agrees with experience and everything else and does not agree with experience or anything else and experience itself is both experience and not-experience and all of these propositions are both valid in physics and not valid in physics. If consistency, in short, is in any case appealed to whether in respect to experience or not-experience, as essential to the validity of propositions, it cannot be consistently denied in other cases and if it cannot be consistently denied in other cases then the physicist as well as any other scientist is logically conditioned in his statements and can neither appeal to nor discover any necessity more primary than logical necessity—nor can he take consistency when he wants to and reject it when he wants to and make a physics consistent with experience or anything else. If physics is a body of propositions which refer to something—and refer to the things they designate—then

any body of contradictory propositions is not a physics nor, in fact, any science at all.

7. Now causation, as we have seen, applies to real particulars and to every real particular. But real particulars are relational contexts incorporate in the implication of the independent and hence timeless (Essay on Existence, par. 12). Therefore causation is timeless. The efficacy of causation is not a temporal category and the problem of the efficacy of causation as a time process is non-extant. Causation is a non-temporal relation integrating histories. It has the same status as the relation between an angle and its functions. All values of the functions are given non-temporally for all values of the angle.

8. Universals, moreover, are unchangeable. Hence the causes for their particular instances are constant. And for every particular and set of particulars the causes are uniform.

That this is sometimes denied on empirical grounds issues from a neglect of the relational character of the particular. If man, for example, is an air-breathing animal then the relation of *air-breathing* is an essential relation in the nature of man. If so then particular instances of air are necessary for particular instances of man and men cannot exist without air i.e. air in relation to other essential factors. Now empirically experiment will or may show whether man is or is not an air-breathing animal i.e. whether this relation is, or is not, essential to man. If it is, then particulars which do not involve this relation are not men i.e. they conform to a different set of essential relations and have a different liaison of causes. It is always the relations which make the thing. But whatever the class of things is, the things in that class are instances of some universal and are causally determined in their existence by the particulars necessary for them in accordance with the nature of that universal.

9. Direct causation is causation in which the event which is the effect is immediately dependent on the event which is the

cause, e.g. innervation of a muscle which produces contraction. Indirect causation is causation in which the effect is produced by an intermediate cause which is the effect of a prior cause, i.e. innervation of a muscle resulting mediately from sensory stimulation.

Now a particular cannot be the direct cause of all other particulars. This follows from the nature of a particular and the infinity of the realm of existence. Consequently for any given particular some particulars do not enter as elements into its cause. Therefore no particular has for its direct cause all other particulars i.e. the whole universe is never the direct cause of any particular. The view that it is, arises from the illicit substantialization of particulars and from the untenable concept of cause as a temporal process. It is then postulated that the whole universe at one moment must be the cause of the whole universe or any part of it at the next moment. Such a conclusion has little descriptive value. It raises the vicious problems of what is meant by the whole of an infinite temporal universe and how can the content of an hypostatized time be intelligently broken up into moments.

10. Every particular, to continue, is an instance of a universal. And every particular is a history, a relational complex and exists in a relational complex. Therefore no particular can exist without some other particulars on which it is dependent. There is hence no realm of particulars in which the causal relation is absent. Nor are causal relations identical in two realms since if that were the case they would constitute the same realm. I.e. every instance of causation has its own uniqueness, as well as its similarity, with regard to other instances of causation.

11. In every realm of existence causation is constant and uniform. This follows from the nature of causation itself as a relation constituted by the essential relations of particulars.

It is possible to imagine a multitude of realms different from this one e.g. where fire freezes and ice warms, but it is quite clear that the fire and ice of that realm are not the fire and ice of this one and it is only by the grace of language that they can seem the same, i.e. they are given the same names.

12. Now as we have seen, the realm of particulars is intel-

ligible i.e. it is a component in the implication of the independent. There is, hence, nothing in the essence of any particular which excludes it from every possible relation with any other particular. The realm of particulars, therefore, is continuous i.e. no particular is absolutely unrelated to any other particular; no history to any other history.

But in any realm of particulars those nexa of histories which are causally separated by an infinite number of events from other nexa of histories are relatively self-contained. Now the histories which compose a relatively self-contained group constitute a world. A world is a nexus of histories causally related—i.e. a world is a relatively self-contained nexus of particulars. But the realm of particulars is the realm of existence. And every particular exists in a causal world. Hence the realm of existence is constituted by an infinite number of causal worlds—namely, all possible worlds.

13. The causes of any events in a world are in that world. Hence whatever affects causally the events in a world is included in that world. But every cognized event affects causally the events in the world in which it is cognized. Hence every cognized event exists in the world in which it is cognized. But the contents of dreams, hallucinations, illusions, fancies, imaginations, etc., are cognized events. Therefore the content of dreams, hallucinations, etc. exist in the world in which they are cognized, i.e. the world in which the events of the so-called normal state also exist.

14. Lastly we have to consider the category of chance. Histories may be divergent or they may be convergent. I.e. they may be causally separate or they may intersect. Histories which share a common event intersect. E.g. the meeting of two friends in a foreign country or the passing of two ships at sea. The intersection of histories follows from the necessity of their respective causal relations. Now the common event has antecedent causal elements in both histories. The intersection of histories, respectively independent in their causal relations, is chance. Chance, thus, is a consequence of causation e.g. an accident, a train wreck, or any other confluence of histories. And chance is necessary with a necessity equal to and included in that

of causation. Furthermore, every existential world is a world of histories. These histories are interwoven into a causal pattern and hence they intersect. But this constitutes chance. Chance, therefore, exists as a character of events in every existential world.

In conclusion it may be said by way of corollary that it is from the impossibility of foreseeing chances that risk arises. If a directed line of action is undertaken it cannot be predicted what extraneous elements will enter and deflect it. Hence it follows from the nature of causation and the character of finite cognition that risk is an element of all action of finite knowers in any existential world. We shall, however, see the grounds for this proposition, in examining the nature of the cognition of particulars.

CHANGE

1. The major question with respect to change is not that of its existence—since in *some* sense, at least, it exists—but that of the sphere of things in which it does exist. That all things do not change we have already seen. That some things change is evident. We now propose certain propositions about change whose validity, in this and the following three essays, we mean to support, namely: (1) change is intelligible i.e. change is not contradictory, hence (2) change is possible, and (3) in its proper sphere it is necessary.

2. In the Essays on Dependence and Existence we have seen that the essences and causes of real particulars are consequences of the implication of the independent. Particulars, however, follow from their essences and causes. They are, therefore, constant. The realm of real particulars i.e. the realm of histories, is invariable. Real particulars do not change. They constitute the infinite domain of existential possibility. We shall not, therefore, look for change among real existents.

3. Now when a thing changes there is an element in it which persists i.e. which remains the same. Otherwise the thing could not be said to change. For the subsequent thing would be something totally different. The thing would not change e.g. a boy grow into a man, but, on the contrary, there would simply be a succession of different items. Change involves a non-changing element.

4. This permanent element in the change of a thing is that without which the thing cannot be. For if this changes the thing would not change but cease to exist. Hence the permanent element in a changing thing is the nexus of essential relations which constitutes its real existence.

5. The relations involved in a particular are either essential or non-essential. Those relations, however, which are non-essential to one particular may or may not be essential to some other particular. The relation of equality between angles with

an included side is essential to an isosceles triangle; it is non-essential to a parallelogram. Hence some non-essential relations may have a proper sphere in which they are essential. And a relation which is proper to a class of particulars is fixed in those particulars. A non-essential relation, however, which pertains to no class of real existents as essential is combinable with or retractable from any real particular without affecting the existence i.e. the ontological possibility, of that particular. It is, in other words, mutative or logically unstable. A relation, in sum, which may be added to or subtracted from a real particular without retracting the existence of that particular is non-essential to it and is a mutative or unstable relation. We have seen, however (Essay on Existence, par. 9), that the presence or absence of the cognitive relation regarding a real particular is non-essential to that particular. No real particular possesses this relation in its essence. The cognitive relation is, therefore, a mutative or unstable relation.

6. Now by change we mean the addition to, or the subtraction from, a real particular, of a relation which is non-essential to it and hence which is mutative with respect to it. We shall for the sake of brevity indicate the phrase "the addition to or the subtraction from" by the term *transition*. (It is to be remarked that, as we shall afterwards indicate, the terms addition, subtraction and transition as here used have no temporal connotation whatsoever.) Change is the transition of a non-essential relation. But a relation is a relation of terms and a relation of particulars is a relation whose terms are particulars. Particulars, however, are events (Essay on Existence, par. 7). Hence change is the transition of that relation which is non-essential to real existents, namely, the cognitive relation, from event to event. What the grounds or motivating conditions of this transition are we shall examine in the following essay. At present let us consider the nature and consequences of the transition to which we refer.

7. The transition of a mutative or non-essential relation which constitutes change is timeless. This is fundamental. Without the distinction of time from change the primary characters of both are neglected. Change, in so far as it is real i.e. con-

cerned with real particulars as terms, is a timeless relation. Time is the product of change (Essay on Space-Time, pars. 4 and 5). The transition of the cognitive relation from one particular to another involves no time whatsoever. It is instantaneous in that it involves no duration, no before, no after. It is a shift of envisagement and the categories of time such as speed or duration do not apply to it. All primary change is without rate; it is like gravity which is (or is supposed to be) instantaneously present at different places; it is like the transition, when an illumination is extinguished, between light and darkness. There is no time-lapse whatsoever. The rate of all change, to state this in a somewhat elliptical way, is infinite i.e. instantaneous. We are here referring, of course, to change which is not temporal at all but timeless in its nature and out of which the appearance of time itself is engendered.

8. The timelessness of change gives rise to the paradoxes about point-instants. The fact that change is non-temporal removes the possibility of making any division of it absolute. The only measures of change that there are, are relative. Hence to whatever degree of fineness they are reduced there is a range of fineness beyond. Again, if at any point they are considered as absolute and ultimate units, the world of change becomes a world of separate, fixed point-instants and there is no place for any change in it of any kind—even the change of appearance. Now point-instants have a meaning. They serve to distinguish events e.g. the speed of a body at any moment after it starts to fall. But they do not break an instance of change up into segments. Point-instants are absolutely timeless. They serve simply and only to indicate difference relations in a dense series of difference relations in a process of change. The fact that one part of an instance of change differs from any other part requires some means of expression and the linguistic device to indicate that fact is the point-instant.

9. Every event, to proceed, is a particular. And a particular is an infinite regress of relations (Essay on Relations, par. 22). So that within any particular there is an infinite number of particulars—that is, the difference relations in a part of a process

of change can never be reduced to zero regardless of how minute that part may be taken to be. Hence a point-instant, even if taken as part of an event, can never represent no change at all —i.e. it cannot represent what is contradictory, namely, a static moment in a changing process. But a point-instant is not, in any sense, an integral extended part of an event. It is simply a difference relation selected out of the dense series of difference relations which constitutes the event.

10. Change cannot be deduced out of time by the segmentation of an instance of time into a succession of substantialized point-instants, which succession is called change. Time, on the contrary, expands out of timeless change in a manner whose character we shall presently see. And precisely because change is timeless all attempts to reach it by dividing up time indefinitely never get to change at all but only to successive expressions of change in time.

Since, moreover, the transition of the cognitive relation is instantaneous i.e. involves no time-lapse, such a lapse cannot be divided up for it is impossible to divide that which does not exist. Hence in the realm of time itself, which is produced by the transition of the awareness relation, no static instant can empirically be found or made logically intelligible. Since time is the product of timeless change time itself is absolutely continuous. It is without disparate segments. It cannot be granulated. And this, moreover, is perfectly compatible with the use of point-instants as representatives of the differential variations involved in a process of change. We shall later have more to say about the character of time which leads to this result (Essay on Space-Time).

11. We next have to indicate that in this concept of change there is no question of a relation both applying and not applying to the same thing at the same time. The phrase "at the same time" is irrelevant. The category of time does not enter the difference relation which we have here designated as change. It is, on the other hand, a consequence of it. Where there is no time, the *same* or *different* times are simply inapplicable terms. The non-essential mutative relation in an instance of change applies

to different events individually—but neither at the same nor at different times. Every attempt to speak of its shift temporally is a reading back, owing to the habitual mode of considering objects, of temporal order into a non-temporal realm.

12. Lastly, there remains to consider a relevant proposition which follows from the nature of existent things as real particulars, namely: an instance of change is not an event. An event is a complex of particular, essential, non-temporal difference-relations (Essay on Existence, par. 13). But the cognitive relation which is mutative and unstable is essential to no real particular (*ibid.*, par. 9). Therefore instances of change i.e. instances of the non-temporal transition of an unessential relation (in this case the cognitive relation) are not events. And this was the proposition to be demonstrated.

The mutative relation, moreover, whose transition constitutes change, like any other relation, if it lacks terms, is non-existent. But its terms are events i.e. real existents, since if real existents were not, then neither terms nor relation could be. I.e. if an instance of change had no content it would not be an instance of change. But the terms of the mutative relation in which change is involved are the contents of an instance of change. I.e. events, or real particulars, are the content of any instance of change but not the change itself. Change exists because there are events and if there were no events there would be no change; but precisely for this reason, events i.e. real particulars, are independent of change. Change without content is nothing but if change has a content that content is non-temporal. If, in other words, there were no content to change to there would be no change. That change, however, and the content of change, namely, events, are distinct and different items is commonly recognized, since there are few things held to be more changeless than past events. And things which can be distinguished are distinct.

AWARENESS

1. Like equality awareness is a relation which cannot be defined without presupposing in the definition a knowledge of the relation itself. If we define equality as the relation between items having the same character e.g. the same area, we already imply a knowledge of what is meant by *the same* and this is nothing other than equality. It is not the area that constitutes the equality but the sameness. Likewise if we define awareness as the relation between two items such that one of them becomes the object of cognition for the other we have in the use of the term *cognition* employed a word no more immediately understood than the term awareness. And so it is for other terms proposed as available for the definition of awareness.

2. But like equality the indefinability of awareness does not remove its knowability. Although we cannot define equality we are immediately acquainted with it and employ it as a root concept in the definition of other things. Indefinables, in fact, are only unknowable if they are instances of nothing (Essay on Nothing). Otherwise they are intelligible, have a status in being, and are amenable to awareness.

3 Now awareness, as is evident from the thing itself, is a cognitive relation. It is a relation essential to any instance of knowledge and is subject to the logical conditions of knowledge, hence to those of truth, error and being. I.e. we are never aware of anything that does not have being. This is clear enough from the consideration that if we were we would be aware of nothing, but this is absurd.

4. Furthermore, awareness is a relation like other relations—e.g. equality, difference, dependence, greater, less, better than, etc. Like these relations it has terms and direction. Its terms are the perceiver and the perceived and its direction the transition from the perceiver to the perceived. Just as, for example, the direction of the relation A is greater than B, is from A to B;

of the relation A is the father of B, is from A to B, so the direction of the relation, A is aware of B is from A to B.

5. Now the awareness of particulars without the awareness of their logico-ontological relations, i.e., their implications, is perception. Perception refers to appearances since no particular apart from its logico-ontological relations is intelligible (Essay on Dependence, Prop. XXXV, Note). The awareness which constitutes perception shows particulars as an unordered aggregate in a nexus of space-time relations. It is opaque, however, to the relations of the particular to its universal and to the relation of the universal to prior universals; hence to the relation of the particular to the whole of meaning. Thus the particular, as perceived, is something given and does not go beyond itself. It is discrete and is isolated from the lines of implication which are proper to it.

6. Instances of awareness are distinguished by scope, vividness and persistence. The terms of an awareness relation which is a perception are particulars i.e. events or histories. The perception of particulars is more or less extensive, more or less vivid and more or less persistent and regular. The perception of particulars which are less vivid and less regular in their relations is imagination. The perception of events the same in their non-temporal essential relations, more than once, is memory. Memory as such is memory whether we know the perception it involves to be a memory or not. It is independent of this condition. We can be in error about perceptions as to whether they are or are not memories.

7. The perception of irregular particulars i.e. particulars which vary from customary or normal particulars of their kind is illusion. The perception of particulars during sleep is dreaming. The particulars i.e. the histories or events perceived in ordinary sense perception, in imagination, in memory, in illusion or in dreams are all equally existent. They are all particulars which have a status in being, which are part of the causal world of the perceiver and which participate in the whole of meaning.

8. An ego is a particular i.e. a history, which is a perceiver. An ego is aware of itself when any event in the history which constitutes it is aware of the other events of the history and their causal relations. But every event is a particular i.e. a regress of relations. And no event can be aware of the infinity of relations included in a particular. Therefore an ego can never be wholly aware of itself i.e. an ego can never wholly know itself. And other egos can be aware of the events in an ego which it itself does not know.

9. Intersubjective cognition is the awareness of one history by another when the cognized history is an ego. This awareness arises through sense-perception, imagination and memory. In what manner it occurs we shall presently see.

10. Now the events of a history are amalgamated by causal relations (Essay on Causation, par. 6). And the relations are of infinite complexity. Consider, for example, the relations of the cells in the body. Therefore the perception of one history by another is always partial. One history never perceives another perfectly. Hence intersubjective cognition is never complete. And, in particular, one human never knows another in any absolute sense.

11. Since parts of the history which constitute another subject are always unmanifest to sense perception the lacunæ thus formed in the perceiver's cognition introduce discontinuities into the appearance of the perceived history. The gaps which these discontinuities represent are filled, by the subject, with events which he perceives through imagination. Hence other subjects are, for the most part, imaginary. This does not mean that they are not real (Essay on Existence, par. 10). But it does mean that imaginary interpolations may be predicated of subjects which do not possess them and hence that the perceiving subject can be in error.

12. Since, however, the imaginative perceptions which a history possesses follow from the nature of that history (i.e. from the peculiar causal characters of the events which constitute it) as well as from the nature of the cognized histories, the imaginary events interpolated in another history i.e. in a perceived history, to give it continuity and to replenish the lacunæ in di-

rect perceptive evidence, represent as much the character of the judging history as that of the judged. In so far, moreover, as the histories which constitute egos are alike, their imaginations tend to be alike and the interjudgments they make of one another tend to be applicable. But the number and variety of difference relations in humans is great. They are of different sexes, different occupations, different nervous systems and different generic types e.g. the pycnic type, the asthenic type, etc. To these are added individual differences. But these differences form the basis of error in imaginative interpolation. It follows hence that social life involves a galaxy of misjudgments, which misjudgments are parts of the causal nexus which makes up social history. In other words it is inevitable, as a consequence of their finite and differentiated natures, that individual perceivers do and always will misjudge one another. Such misjudgment, however, is the source of a considerable part of the disorder in human relations. This hardly requires demonstration. It follows that a considerable part of the disorder in human affairs is inevitable—it has been and always will be and the request for its abolition is simply the request for a different kind of existential world.

13. The history which constitutes a subject may be divided, for the sake of reference, into those events which compose the body and those which make up the feelings. The feelings of another subject are perceived by imagination. Sense perception shows us bodily events only and their relations. The feelings, therefore, make up a group of phenomena readily subject to misjudgment.

14. We are, furthermore, aware of the awareness of other histories only by imagination. We are aware of the environing events in which other subjects appear. We tend by analogy to imagine all people to be aware of what we are aware of. Here again the principle of illicit interpolation may be operative. Owing to the uniformity of language as compared to the background of differentiated objects of reference to which it is applied, error in such imaginative interpolation is greatly facilitated.

15. A perceived particular is an event. Every event that is perceived exists i.e. is a real particular; all possible particulars, for that matter, exist (Essay on Existence, par. 11). Every perceived particular, therefore, exists exactly as it is perceived. Hence no perceived object is other than it is perceived and it represents no other object behind it which is a substratum. Every object in an event-series is exactly what we perceive it to be and not something else.

16. But every particular which is perceived by the senses is partly perceived by imaginative interpolation. The discontinuities of sense perception are merged with imaginative constructs which make an object consonant with the experience of the perceiver. The exterior of a solid sphere, for example, is perceived by the senses but not its interior. The latter is perceived, if perceived, by imagination only. The opposite face of the moon is an imagined but never seen particular. The heart, lungs or brain of a living body are perceived, barring cases of actual operation, by the imagination; and so on indefinitely. A common object of perception is thus a compound of sense perception and imaginative intuition and the contributions of the two make a whole, continuous in its nature and harmonious with the constitution of the perceiver. E.g. there is no a priori reason why the moon should have any other face at all. But the force of common belief built up by association with three dimensional objects urges the imagination to supply what sense perception lacks, and in this way, make the perception of the moon congruent with that of other things.

17. This evokes, however, the problem of the validity of perception; of the correspondence of the perception of an object with the object—a problem commonly illustrated by the examples of the bent stick or the oval penny. Let us take the bent stick. The bent stick in the water is real. It is an individual history exactly as it appears. It is not something else. The straight stick which it is supposed to represent is strictly imaginary; but it is also real (par. 11). The straight stick is not the bent nor the bent the straight. They are two different sticks, one perceived by imagination the other by the senses.

18. Now the straight stick or any number of other things

can be imagined to be the so-called underlying *real* objects which cause the bent stick. But they are, in fact, no more real than the stick they are invoked to explain. And they are not real at all if identified with the bent stick since they would be both bent and not-bent which is contradictory. Hence for any given particular which appears, an indefinite number of other particulars can be considered, by imaginative interpolation, as related to the apparent particular as unseen substrata. If one leaves a room the table at which he sat does not cease to exist. But it is a possible i.e. real particular, and is cognitively related to the subject by imagination and not by sense perception. It is, in short, an imaginary particular. There can be just as many real imaginary particulars to complete any continuum or to underlie other apparent particulars as there are possible particulars. Whatever we imagine or remember is as real as what we see and hence we are perfectly justified in saying that the objects which we do not immediately see, nevertheless are.

19. The qualities of a particular are particular qualities e.g. the redness of a rose is a particular instance of redness. And all the qualities of a particular are qualities of that particular and not of something else. This proposition may seem obvious and hence unnecessary but since there are those who seem to deny it, it can bear explanatory comment, namely: the qualities of a particular are not divisible into two kinds: primary—which are in the particular, and secondary—which are in the perceiver e.g. color, sound, smell, taste, etc. These secondary qualities are equally in the particular with the primary qualities i.e. they are perceived as much as any qualities are perceived. The events which make up the taste or color of an object are part of the event-series which constitutes the history of that object. But the history is the object (Essay on Existence, par. 7). Hence these events, namely, secondary qualities, are components of the object.

20. It follows that secondary qualities are not identifiable with any other qualities. Colors, sounds, etc. are not ether waves or air waves (these are imaginary particulars supposed as substrata [par. 18]) but exactly what they are perceived to be. A

patch of red is a patch of red and not something else. The doctrine of the mechanical nature of secondary qualities which identifies them with vibratory motions in a pervasive stuff-like medium is a bit of plausible superstition promulgated by substance-minded physicists in order to fill out the theoretical symmetry of the material world which they construct.

21. It follows from the foregoing paragraphs that error with respect to perception is impossible. That which we perceive exists and if it did not exist we could not perceive it. Error in *judgments* about particulars nevertheless arises and the analysis of the process by which such error arises requires some comment.

22. Error is contradictory predication (Essay on Error, par. 27). If, therefore, we make contradictory predication about perceived objects we fall into error. Now if we see a particular e.g. a man and judge him to be A, we judge him to have all the characteristics which A has e.g. right-handedness. I.e. we imagine him to be right-handed. If the particular object, however, is B who is not right-handed we still judge the object to be what it is, namely, an object which is not right-handed; i.e. in judging it to be what it is we judge it, although not explicitly, to be not right-handed. Hence in judging him to be A we judge him to be an object which is both A and itself i.e. which both is and is not right-handed, which is contradictory. Now it is to be carefully noted that both the A that we imagine and the B that we see are existent particulars (par. 18). And in so far as we perceive them, the one by imagination and the other by the senses, our perception is accurate. When, however, we judge that the one is the other, we judge that to be identical which is different and hence fall into apparent language i.e. language which has no content or which, in other words, is an instance of nothing (Essay on Nothing, par. 9). Error about particulars is *ἄλλοδοξία*, i.e. not the perception of that which does not exist but the illicit interchange of particulars which do exist. This interchange is only possible because of the capacity of the imagination which permits the perception of particulars other than those immediately seen by the senses. In so far as we remain strictly within

sense perception we never exchange one thing for another. Since, however, such pure sense perception never occurs, error in judgments of particulars is always possible and, in some degree, generally present.

23. Every history is a particular finite thing, subject to causal determination; and it cannot exist outside of its relations (Essay on Existence, par. 7). But it is determined in its relations by the universal of which it is an instance (Essay on Causation, par. 6). It cannot, therefore, enter all kinds of relations with all other things. There are some relations which, owing to its finite and determined nature, it cannot enter. But the particular relations it cannot enter it cannot be conjoined with by the cognitive relation. I.e. it cannot be perceptually cognizant of those relations from which it is, by its very nature, excluded. E.g. a two dimensional particular could not be perceptually cognizant of certain relations in a three dimensional continuum—or, to use a more immediate example, a human could not be perceptually cognizant of certain relations on the sun because he could not exist there. Hence there are some relations from which the perceptual cognition of any particular is excluded. Awareness, however, is a cognitive relation and therefore any instance of awareness is limited in scope. There are some things outside of it—in fact, there are whole existent worlds outside of it. The awareness of any particular is, therefore, not ubiquitous. It is selective. Of all real existents it manifests those compatible with the nature of the events which constitute its terms.

24. Now by the manifestation of a history we mean its entrance as a perceived particular into an awareness relation. But particulars are unstable and dependent i.e. logically incomplete (Essay on Dependence, Prop. II). And particulars are nexa of relations (Essay on Relation, par. 22) which constitute situations or events and which are coalescent with other systems of relations or events (Essay on Existence, par. 8). In the realm of real existents a particular has no boundary which isolates it from other things. It is continuous with the events which constitute the causal sequence of which it is a component and it is continuous also with the nexus of implication which makes it in-

telligible and which determines its causal relations (Essay on Causation, par. 6).

25. Now a cognitive relation, we have seen, has the following properties: (1) it does not enter the essential nature of any real particular (2) it is subject to the conditions of logical consistency. It is unstable in the presence of ontological—and that involves logical—incompleteness (cf. Essay on Change, par. 6). But the awareness relation is a cognitive relation. And particulars, as such, are unstable and incomplete. Hence the awareness relation is no more proper to the manifestation of one event in a history than another. It is fixed on no event since the realm of real existents is a relational continuity and the variation between differences in that realm forms a dense series (Essay on Difference, par. 11). It is propelled by the logico-ontological incompleteness of any event in a history to the relational system into which the event merges. And since an event expands implicatively to that which completes it the awareness relation is progressively translated from manifestation to manifestation and is in an unremitting transition from any manifestation to the other of that manifestation with which it i.e. the manifestation, is existentially continuous.

26. This transition of the awareness relation is change (Essay on Change, par. 6). It is the elementary change which gives rise to the manifold appearances of change in perceived particulars. It is the primary change from which all other changes originate. Just as the diurnal motions of the stars issue from the single motion of the earth in its daily rotation so the multitude of changes in the world of perception arise from the primary and generative change constituted by the progressive transition of the awareness relation in an existential world of real particulars. Change and manifestation are one and the same thing. And since manifestation is nothing other than the appearance of histories in the awareness relation the world of change is the world of appearance. A real particular, however, when it is manifested in appearance in no sense relinquishes its existence.

27. The transition of the awareness relation, namely change, is timeless (Essay on Change, par. 7). Time and change are colligated, they are related as dependent and principal. Time is

an expression of change—they are not identical. Primary change which generates all temporal change is itself non-temporal.

If between two manifestations other manifestations intervene the two manifestations are separated. But if no manifestations intervene the two manifestations are contiguous and the change between them is non-temporal e.g. the change between sound and silence when the voice of a speaker ceases, or the change between the last perception of a star and its disappearance below the horizon. But since the transition of awareness is from manifestation to manifestation in a dense series and for each change the time is zero for all changes the time is zero. Obviously if one tries to comprehend this in terms of sense-imagination he will include time in his constructed picture and fail much in the same way that he would fail if he were to endeavor to see visually the square root of minus two. It may be interposed: of course, if there is change there is time since they are the same—but this latter is exactly what cannot be said. As we shall presently see, although change is non-temporal it is not, therefore, fixity. It is timeless but it is the source from which time arises. The awareness relation is subject to ceaseless change. But regardless of how vast the change or how many changes intervene between two given changes there is not one second of time in the whole.

SPACE-TIME

1. The prerequisite for the treatment of any subject lies in the understanding of the categories which are essential and anterior to it. Without such understanding the subject is nebulous and wavers in mid-air. With the presence of this understanding, however, it is seen that the necessity determining the subject issues from the nature of the categories essential to it. These categories lay down the conditions which determine its possibility—and its possibility and its being are one and the same. The subject, in other words, is a consequence involved in the implication of its relevant categories.

2. The proper introduction, therefore, to any subject, is a treatment of the essential categories which it presupposes. If these are comprehended the subject finds its own expression. Without the treatment of these, however—irrespective of how extensive the exposition—the subject is left unorientated and inadequately described. The introduction, therefore, to any subject is an incorporate part of the whole—and the introduction merging, as it does, with the exposition proper, constitutes the whole.

3. Now such applies to our present topic, namely, space-time. The introduction to this topic is none other than the treatment of the categories we have thus far considered. Practically speaking, every essay antecedent to the present one is involved in it. Hence our treatment of space-time is nothing other than the whole exposition included in these essays extending through the present one. And the present essay is a continuation and consequence of those which have gone before. How this is we may proceed to examine.

4. What we mean by an instance of change we have already stated (*Essay on Change*, par. 6). Now we call an instance of change fluent when it involves a dense series of differences. In a dense series of differences no single difference is isolated from, or outside of, the continuity which involves the other differences

forming the series. The characteristic of fluency is essential to time.

5. By time we mean the appearance of fluent variability in the manifestation of histories. Manifestation we have already defined (Essay on Awareness, par. 24). Such variability arises from the non-temporal transition of the awareness relation in the realm of real existents. This transition arises from the nature of the awareness relation itself and from the logical status of the particulars which it manifests and hence is necessary (*ibid.*, par. 25). Time, therefore, is necessary. A consideration of the subordinate categories of time we shall defer until we have defined the nature of space and space-time.

6. By space we mean the manifestation of events in perception as distinct and discrete individuals. But whenever individuals are distinct and discrete they enter as terms into a relation of betweenness. Betweenness, therefore, and space are compresent. And nothing spatial, as such, can exist without an environment, namely, the alternative terms in the betweenness relations in which the spatial object participates. Those objects between which, in their manifestation, nothing exists i.e. no separate difference exists, are not discrete items but spatial units; they are not distinct but indistinguishable. To state this negatively and with the slight inaccuracy of using the concept *point* which is a spatial concept, we may say that if all particulars in an existential world could be perceived at a point such that they were devoid of any distinctions or betweenness, there would be no space in that world. We have seen, however, that the scope of awareness is limited (Essay on Awareness, par. 23), i.e. all particulars cannot be perceived at once. Therefore, some particulars must be perceived as distinct from others, i.e. as participating the relation of betweenness. But this constitutes space. Space, therefore, in the manifestation of an existential world is necessary.

7. Now the fluency of time arises from the transition of the awareness relation. But the spatial discreteness i.e. the space of perceived events follows from the nature of awareness. Both of these characters are, hence, compresent in the manifestation of particulars. They are, in fact, correlative aspects of it and make up a single continuity of relations. This compresence and con-

tinuity of relations in the manifestation of particulars is space-time. Space-time is the differential manifestation in the awareness relation of fluent histories i.e. the manifestation of histories (1) as discrete, hence possessing spatial relations and (2) as fluent continuities, hence possessing temporal relations. Thus while space and time are component aspects of a process from which, if either is separated, it is nil, yet in this process they are not identical but distinguishable aspects.

8. A consideration of time, space and space-time suggests a fourth category which is, in reality, distinct from and not included in the relations which these comprehend, but which we shall define at this point with a view to returning to the definition at a later time. This category is eternity. By eternity we mean the manifestation of the logical implication of the independent. Eternity is not a temporal category. If so considered, which it cannot be, it would have to be considered as something instantaneous, in an instant which had no successor.

9. The character of space-time is determined by the character of the events in whose relations it is comprehended.

We have seen that the bases of space-time lie in real existents. The nature of these existents, i.e. their difference relations, determine in what manner they can appear in manifestation. This applies to both terms of the awareness relation, the perceiver and the perceived. The nature of the perceiver determines what kind of a temporal world he can perceive, and the nature of the perceived events (as related to the perceiver) determines in what manner they can become manifest for that perceiver. Thus, for example, if a perceiver were completely devoid of memory his space-time world would be different from a world in which the perceivers had memory. It would be a world in which there could be no cognition of the relation of past to present things. This difference would be dependent on the nature of the perceiver himself. Or, to take an alternative example, if his world involved only circular lines he would have a space-time peculiar to such a world, in this case, owing to the character of the perceived events in it. The space-time of any world, in short, is not the product of

extraneous factors in awareness but of the character of the terms of that relation i.e. of the histories in the existential world in which it is.

10. There are as many different space-times as there are existent worlds, namely, an infinite number.

This follows (1) from the proposition that there is an infinite number of existential worlds (Essay on Causation, par. 12) and (2) from the proposition of the foregoing paragraph i.e. the character of the space-time in any world is determined by the nature of the events in that world. It is important to note this proposition because we shall have more to say about it in considering the nature of science.

11. Space and time contain subordinate categories. These categories are fundamental characteristics of space and time which any exposition of those items must define. The categories of time are: the present, the past and the future. These categories include the relation of before and after and hence all the different relations involved in the tenses of grammar.

The categories of space are position, direction and distance. Size, area, and volume are species of distance. Shape and the coördination of shapes i.e. structure, are species of direction.

12. By the *present* we mean an instance of the awareness relation together with its content.

The relative position of awareness in any history constitutes its present. The present is nothing other than the terms of an awareness relation, and hence whatever we are not aware of is not part of the present. But whatever we are aware of in any sense is part of the present. Hence the events which we dream or imagine are equally parts of the present with those which we perceive by sense-perception. Now we have previously seen that all perceived objects are partly imaginary (Essay on Awareness, par. 16). But the present is constituted of perceived objects. Therefore the present is partially imaginary. Imagination, however, depends on the nature of the perceiver and differs with different perceivers. Hence the present for any perceiver is partially

dependent on the nature of that perceiver. This applies also, as is evident to the past.

13. A moment or instant is a present and conversely a present is a moment or instant.

A present arises owing to the limitation of scope of the awareness relation; a condition also which determines the transition of that relation (Essay on Awareness, par. 25) since all particulars partially considered, are unstable, incomplete and fluent with other particulars. If the awareness relation were infinite (which it cannot be for a finite perceiver) all events would be equally present. Time would then be instantaneous, that is, it would be constituted by one comprehensive moment which would be eternity (par. 8). Such a moment would obviously involve no before or after, no then or now or any other finite temporal category. There would be no psychological or common time in it and hence nothing of what we call lapse of time.

14. By the past we mean the complex of events constituting the causal antecedents of the present. The past is defined by the relation of any present to its particular causes.

Now since no particulars are disconnected from causal relations with other particulars (Essay on Causation, par. 6) there is no event without a history i.e. there is no present without a past. Moreover, since all existential worlds are causal worlds (ibid., par. 12) there is no present in any existential world without a past. There are just as many pasts as there are presents. The same propositions, as we shall presently see, apply to the future or futures.

15. Again while the present is nothing but the content of awareness it is not a present except as a term of the awareness relation. The past, however, is an event complex integrated by causal relations. The past, therefore, is a past irrespective of its entrance into awareness, i.e. a past event may be part of our past without ever having entered the scope of our perception either as an object of sense perception or of memory.

16. This brings up the question, however, of the relation of memory to the past. The only way that we could actually recall a past event would be to go back in our history and relive it and do this without the awareness that it was being relived. If not,

the past which now becomes a present, would be a different present from that which it originally was. But this would not constitute an awareness of the same past. But even such a reliving would not be any more a memory than any present experience. An event cannot be in any exact sense recalled by memory. First because the perception of the events involved in memory would make the event a present event. But if present it would be part of the complex of present events i.e. it would enter into present relations with present events. In so doing, however, its own nature would be modified in such a way that it would be a different event from the original past event which gives rise to it. If a man, for example, remembers a past injustice done to him but feels no detriment from it or even feels that his state has been improved by it he tends to view it indifferently or to be but mildly aroused by it. If, however, he remembers a past injustice but considers it a matter of present misfortune, it has a very pronounced tendency to excite his anger. Now the point is that the remembered event is not the same as the past event. It involves not the past event simply but the past in relation to present circumstances; not the past event in relation to past circumstances as it was, as an experienced event in the history of the individual. The anger of the man in the above example is not caused by the relational complex which made up the past event but by another relational complex involving only present relations in which, however, elements similar to the past are comprehended. The fact that the remembered event is, owing to its relations with present events, not the past event, is indicated by the different effects it may have on the man according to the nature of his present circumstances. A remembered event and a past event are, in sum, two different items.

17. Let us return now to our former proposition, namely, that there is no past without a present. The present is the *sine qua non* of the past. Hence properly speaking the present comes before the past, i.e. the past of any present is determined by the relations of that present. The past therefore is always coming into existence and always changing. The past of a history for one present is not the past of the history for another.

18. This does not mean, however, that the events in the

realm of real existents change. Such we have seen is impossible. It means that the transition of the awareness relation from which the relations of past, present and future arise, is non-temporal and fluent. Every present is ever vanishing into another present and there is no point at which the process rests. This means, for example, nothing more than that we would not have to turn the pages of a book over if we could see them all at once—but having to turn them over, there is for each page that we turn, a different past and a different future, i.e. the pages turned over form a different group and the unturned pages form a different group for each page that is turned.

19. By the future we mean the causal consequences of the present.

We have seen that causal priority is also temporal priority. The future, however, is the causal consequence of the present. Therefore the future is that part of a history which has not entered a perceptual present. It is to be noted that it is not future because it is existent, but because of its relation to awareness i.e. to the present.

20. Now while memory is confined to the past—memory is that species of imagination which perceives past events in present relations i.e. in their relations to the present (if memory was the perception of events as present, the events would be present, and, in fact, all remembered events are present but not as contents of sense perception)—there is a species of imagination which perceives future events. E.g. if a man picks up an apple he may imagine himself as eating it and his imagination may correspond to the facts. In this way the imaginary future may be part of the imaginary present. This, however, is not quite accurately stated. It is better to say that the scope of any present is extended by imaginative perception to include events otherwise manifested successively. Were it not for imagination we should be riveted, as it were, imprisoned in the narrow present of sense perception. There is no actual sense perception of the future since, if there were, the events so perceived would be present and not future (par. 12).

21. It is sometimes said, to continue, that time or events move from the future through the present and into the past.

From the present point of view, however, this is an inaccurate mode of expression. Events do not move at all. A present is translated through events and the past and future are realms of events defined by their causal relations to the present.

22. Since the events in a history are causally related and since time is the manifestation of histories, time is cumulative i.e. a given present includes the effects of a continuity of presents, namely, the past. A nation, for example, or an individual, at any present in its history contains the cumulated effects of all other presents in that history. It is sometimes surprising to a human to discover that he has been affected by things of which he was hardly aware or perhaps of which he was never aware at all e.g. infantile reactions. It is nothing to be wondered at, however, when it is recalled that all the events in a past causally contribute to the history whether they are manifested in any present or not. The cumulative nature of time from which such cognition arises is due not to the nature of awareness itself but to the concatenation of the events which it incompletely manifests. This is important for, as we shall later see, it has a direct bearing on the exposition of the ontological bases of the process of evolution.

23. The elements of space are position, distance and direction. Other spatial characters are instances of these e.g. size, shape, structure; up, down; above, below; near, far; towards, away; from, where, to, whither, whence; forward, backward; in, out; long, short; high, low; slant, steep, gradual; north, south, east, west; right ascension, declination, etc.

24. We say that one particular is *next to* another when the relevant particulars are so distinguished in perceptual awareness that their discreteness is determined by a common limit. It is to be noted that we say "in perceptual awareness." By spatial relations, here, we refer to relations in psychological or common space, not in real or mathematical space which is non-perceptual and is constituted, as we shall see, simply by the difference relations of real particulars (cf. definition of a real particular, Essay on Existence, par. 9).

Imperceptible differences as such are not in perceptual space—since if so they would not be imperceptible—and since the separation of objects in perceptual space is therefore discrete, perceptual objects as such have common boundaries and are next to one another. As soon as one talks of the separation of objects by imperceptible differences he is, by definition, talking about some space other than perceptual space.

All perceived particulars are, in so far as they are perceived, apparent (Essay on Existence, par. 10). Perceptual space is a system of relations pertaining to apparent particulars.

25. By extremities we mean particulars which are not next to one another.

26. By interpolates we mean particulars which are individually next to each of two extremities.

27. By betweenness we mean the coördinate relations of *next to* connecting an interpolate, or any parts which an interpolate contains, with its extremities.

28. An interpolate which is part of another interpolate is between the extremities of that interpolate and so on indefinitely.

29. By a serial instance of betweenness we mean an instance of betweenness in which the interpolate is considered as constituted of perceptible parts.

30. Any instance of betweenness included in another instance of betweenness, in this case serial, is part of that instance of betweenness.

31. By direction we mean the difference relations distinguishing instances of betweenness as such from other instances of betweenness not included in the same instance of betweenness.

32. If instances of betweenness were identical, they could not be distinguished. If they are separate they cannot be manifested except as different and related. When so manifested any one of them may be an item of reference from which to define the others e.g. ordinate and abscissa in Cartesian coördinates. Now the relative differences of quality which distinguish instances of betweenness as such, are directions. From this it follows, however, that two instances of betweenness not in a common instance of betweenness cannot have the same direction i.e. parallels, strictly

speaking, do not have the same direction. Two instances of spatial betweenness are parallel when the distance separating them is constant. Parallelism and identity of direction, however, are not one and the same. It lies, furthermore, in their very nature that the direction of an instance of betweenness is such only relative to other instances of betweenness.

33. By a line we mean an instance of betweenness together with its direction.

34. By position we mean an event considered as a center of directions i.e. the intersection of lines.

35. The terms greater and less we take as indefinable.

36. By the quantity of a spatial relation we mean the relative greatness of its terms.

37. By the quantity of betweenness we mean the quantitative difference-relation distinguishing an interpolate from its extremes.

38. By distance we mean the quantity of betweenness involved in the relations of spatial particulars.

39. In perceptual i.e. psychological space, there are no infinite lines nor lines which are infinitely divisible.

40. By shape we mean the totality of the relations of direction which involve, as terms, the parts of a thing which comprise its extremities.

41. By the interior of a thing we mean the totality of positions lying between its extremities.

42. By the exterior parts of a thing we mean those parts which contain the extremities in their relations.

43. By the interior parts of a thing we mean those parts of a thing whose positions are between the exterior parts.

44. By structure we mean the directional interrelations of all parts of a thing, exterior and interior.

45. By size we mean the distance relations comprehended in the shape of a thing. Shape and size are distinguishable but not separable.

46. The categories of manifested space are involved in those of time. This follows from the nature of space-time as the manifestation of difference relations in the realm of real existents.

Whatever is in space is in a present, i.e. in manifested time. Let us apply this to the fundamental categories of space.

47. Any place or position is in the event-series which forms the basis of the time in which that position appears. It is that position at that time and is different from all other places in the same or different presents. The nexus of difference relations, in fact, peculiar to a present is that which gives the place its uniqueness and these difference relations cannot be repeated because the repetition would involve new relations. A place is, as we have said, an event constituting a center of directions. But every direction is a direction at a time and is dependent on the events which constitute that time. At a different time with different events, directions are different, since directions are nothing but relations of events. But spatial position depends on direction. Hence it is determined by and involved in the temporal relations in which it exists.

48. This conjunction with time also pertains to the third primary category of space, namely, distance. Distance is constituted by the relations of betweenness into which events enter. The relations of events, however, are transmuted into psychological space-time only as they are manifested in the awareness relation. Hence spatial distance appears only in a *present* and like the other categories of space is determined by the time relations in which it is manifested.

49. The relation of distance is so interwoven into the temporal current of events that temporal and spatial distance are frequently identified. Temporal distance is a lapse of time. By a lapse of time we mean the manifestation of events in a history, which are causally related by intermediate events. Temporal distance like spatial is a species of the relation of betweenness. It is generally merged with the concept of spatial distance because the traversing of any distance, hence its measurement, involves a lapse of time. That the two are frequently identified is indicated by the common reference to distances in temporal terms e.g. in such expressions as: London is six days from New York, or, the location is ten minutes from here, and other such estimates.

50. Since the primary categories of space are conjoined with

and determined by the temporal relations in which they enter it follows that all subordinate categories such as shape, size and structure are likewise so determined. These characteristics of events are not independent of the times in which they exist.

51. Now the differences which make up the relational nexa constituting the objects of space-time are subject to the relations of more and less. They exist, hence, in ratios to one another. No object of space-time is not in a ratio with every other object in the space-time of the world in which it exists. But an object which is the term of a ratio is a measure, e.g. A is $\frac{1}{2}$ B, or, B is 2A, i.e. $A:B :: 2:1$, in some given respect e.g. size. Either term is a measure of the other term and the ratio itself is a measurement.

52. It follows that a space-time world of existent particulars is a nexus of measures and measurements. These measures and measurements are inherent in the relations which integrate that world. They are there, as it were, to be found and discovered. They are not fabricated by perceiving histories but have their basis, like other manifested events, in the realm of real existents.

53. Since every object in space-time is a measure and since objects as we have seen are events-series every space-time measure is an event series. When, however, the events in a series are alike the series is homogeneous. Like events are uniform hence a homogeneous series constitutes a uniform measure. Where the events in a series are unlike the series is heterogeneous and as such constitutes a non-uniform measure. It is obvious that uniform measures, or measures uniform with respect to a given observer are more convenient to use for measurement and calculation than non-uniform measures. Hence humans select out such measures for use. They sometimes, however, fall into the error of concluding that uniform measures are the only measures extant. But non-uniform event-series in so far as they are continuous vary functionally with other things. Hence they are independent variables with respect to other event-series and in this manner fulfill the office of measure. If, for example, a yardstick contracted for a period and expanded during the following period, it would be a non-uniform measure. In case, however, the

amount and rate of contraction or expansion were known the yardstick could still be employed as a measure and the data derived therefrom be reduced to equivalent data from a uniform yardstick. This in fact is what happens with metal scales under variation of temperatures. In either case, however, i.e. whether the yardstick is uniform or non-uniform, it is a measure. The reduction of the data of the non-uniform to that of the uniform yardstick is simply a matter of convenience for calculation. All manifested event-series whether uniform or non-uniform are measures and enter proportions with other things. Whatever exists is measured, although men may not have discovered the measures in which it is comprehended.

54. Now measures involve space-time categories and hence always exist in a *present*. A present, however, is the manifestation of an event complex in the awareness relation. But the awareness relation is in continuous transition, hence *presents* are continually passing into different presents, and measures together with the measurements which they generate are constantly changing. Measurements are the space-time ratios and proportions into which things enter but since they are always changing the space-time universe is an interrelated manifold of mutating proportions. This, however, leads us to the category of motion.

55. Motion is the fluent variation of measure relations i.e. measurements, arising from the manifestation of events in space-time. It is constituted by differences in position, distance and direction manifested in a dense series of *presents*. It is the manifestation of non-temporal change in time and space. Motion thus is a species of change but is not to be identified with primary change. It is the outcome not the essence of such change. The fact, however, that motion is the outcome of non-temporal change gives it certain properties, namely, its continuity and its indivisibility into fixed non-changing instants (Essay on Change, par. 9). In other words, motion owing to its non-temporal origin is not a series of *rests*.

56. Motions themselves vary with respect to one another, i.e. they enter systems of ratios and proportions. Hence one motion is the measure of another motion. A motion, however, which is

the measure of another motion is a clock. It follows that the space-time universe is a system of clocks.

57. When one motion bears a constant ratio to another e.g. the motion of a ship moving with unvarying speed with respect to the current of a river which it plies, the one motion, with respect to the other, is uniform. When a motion does not bear a constant relation to another motion that motion with respect to the second motion is non-uniform e.g. the varying flight of a bird with respect to the earth. When a motion recurs it is repetitive, rhythmic or periodic. When a uniform motion recurs it constitutes a uniform periodic motion e.g. the revolution of the earth in its orbit. Such motions are the clocks selected by humans since like uniform spatial measures they facilitate observation and calculation. They are, however, in the realm of existence clocks to no greater extent than any other motions.

58. Now two clocks i.e. two motions, may vary with respect to one another and this relative variation of motions is velocity. When the variation is uniform the velocity is uniform. But the variation may itself vary. When it is reduced to zero the speed is zero and the two objects considered as clocks are at rest with respect to one another. Rest, therefore, is a special instance of motion. It is simply the invariance of two or more motions with respect to one another. When, however, one object is moving with respect to another object with a velocity unequal to zero the variation of that velocity is acceleration.

59. Velocity and acceleration are categories subordinate to motion. They consequently arise from the source which generates the latter category, namely, the manifestation of particulars in the awareness relation. The existential bases of motion, velocity and acceleration, like those of the other categories of space-time are simply the difference relations distinguishing the histories which constitute the non-temporal world of real existents. From the manifestation of these real existents in transitive awareness springs the ever-vanishing appearance of the mutating universe of shifting proportions which constitutes the domain of space-time.

ACTUALITY

1. By an actual thing we mean a thing which we are aware of in perception, namely, a thing which is perceived. By the actualization of a particular we mean its entrance into the awareness relation as a perceived term. By a fact we mean an actualized particular. Actualization is subject to degrees of vividness. That which is most vivid is called sense perception; that which is less vivid is called imagination or memory. All three, however, sense perception, imagination and memory are involved in the perceptual present. The actual world is the perceptual present. Since, however, sense perception is most vivid and pronounced—to speak by way of example, if a memory or an imaginative item were to become as vivid as sense perception it would *be* a sense-perception and equally present with anything in sense perception—since then, sense perception is the most vivid and pronounced we shall for the moment refer to actuality proper as the present of sense perception. We shall subsequently show the nature of the relation connecting a remembered or an imagined present to a present of sense perception. It is to be noted, in this regard, that a particular does not exist because it is present but, on the contrary, because it exists it can be present. And again, a particular is not perceived because it is present, but, on the contrary, because it is perceived it is present. By our foregoing definition, moreover, an element of the perceptual present, namely, a perceived particular, is a fact. Therefore the actual world is the world of facts and conversely the world of facts is the actual world. Now by experience we mean nothing other than fact. Hence the term: an appeal to experience, is one and the same with the term an appeal to fact. It is to be remembered that nothing not present is a fact.

2. With respect to actuality we have to ask the following questions: (1) what is the status of actuality in being (2) what are the most significant characteristics of actuality (3) what are

the cognate categories of existence to which actuality is related (4) what are the kinds of actuality? Lastly, we have to discuss a primary factor in the determination of the difference between one instance of actuality and another.

3. Let us begin with the first question. The actual is constituted of particulars. Hence it is part of the realm of existence and is therefore dependent (Essay on Existence, par. 3).

It is dependent in two respects. First, since it is the manifestation of particulars in the realm of real existents, it is dependent on those real existents. It is logically impossible without them. Secondly, since its essence involves manifestation its existence requires the relation of awareness (Essay on Awareness, par. 24). It is thus dependent on cognition. Actuality is nothing i.e. is contradictory, outside of cognition. Now we have seen that the realm of dependence is the realm of appearance. The apparent is that which requires some other thing to make it intelligible. The greater the dependence the more complete the appearance. But the actual i.e. an actual thing, is a particular and unique. And no other class of things is dependent, through logical dependence, on it i.e. it has no descending implication (Essay on the Universal and Its Relations, par. 7). Furthermore, actual things are themselves manifestations of real existents and hence are dependent on these and determine no other particulars which are dependent on them i.e. beyond the actual particular no other particulars exist. Hence the actual particular is the ultimately dependent. It is that on which no other instance of being depends and which depends on the rest of being. But reality is independence and unreality dependence (Essay on Dependence, Prop. XXXV). Hence the actual is the maximum unreal. It is that which is essentially appearance. It does not exist in its own right but only as dependent on the rest of being including the awareness relation. The actual, in sum, is the ultimately dependent and the maximum unreal. It is that which is essentially appearance. It is the perpetually vanishing reflection of real existence. By saying, however, that it is unreal we do not say that it does not exist. Everything real or unreal exists. We say simply that, considered in itself, independently of the rest of being, it is utterly inconsistent and hence nothing.

4. Now we have seen that the histories which constitute the particulars in an existential world are manifested in awareness in fluent transition. In the space-time actuality which arises from this manifestation of histories the measure relations of things are in perpetual variation. This variation of measure relations is motion. Directions, distances, times, and positions are ever changing. Whatever is at rest relative to some things is in motion relative to others. And rest and fixity are simply special instances of motion. Since the transition of awareness is fluent there are no absolute rests in the actual world and motion is continuous and indivisible. There are no points not in motion. Every element in actuality is in motion and all elements are in motion. Actuality, in short, is evanescent. It is continually vanishing. The shouts and cries, the turmoil and strivings of yesterday are still there but they are no longer manifested. They are part of the sculptured frieze on the temple of existence. Awareness with the instantaneous rapidity of its transition passes on indefinitely, generating its vanishing world of space-time. Every present is passing into another present. Actuality as a whole is in indivisible and incessant motion. It is an absolute flux. It is kaleidoscopic—a vacillating phantasm of shifting relations. It is a show—a drama of endless scenes, which, however, sublating the limitation of finite awareness, vanishes as a flux but reasserts itself as a relational nexus in the encompassing realm of ascending being.

That there is something indicative and eternal about it, nevertheless, even in its humdrum aspects, every one feels at some time or other. But, generally, it is the tragedy in it which awakens men to a sense both of its unreality and its inevitability.

5. By the term *new* we mean the difference relation between the events in an actualized history and any history or part of a history unactualized in that instance of awareness. By novelty we mean the relation of newness. Novelty is the difference relation between distinct presents i.e. between the perceived and non-perceived events in a history. Now novelty is dependent on two relations, namely, difference and awareness. Were there no differences there would be nothing new; were there no presents

i.e. no awareness, there would be nothing new. Hence novelty is a temporal category. It is an aspect of time. It is always relative to an instance of awareness. The newness of a thing depends on its relation to that which is already cognized. Things are new in relation to perceivers and the knowledge of the perceiver is a determinant in the existence of the new. This is evident from the relation of memory to novelty. Were it not for memory novelty could never be detected since *presents* could not be compared for their difference relations. Or, to state it in another way, the difference relation between a past and a present could not be recognized.

6. Now it follows from the nature of novelty that time is irreversible. In the actualization of a history an event can be new only once. Any repetition of a new event is by the nature of newness impossible. Hence a new event can never reappear as such in time. A process of events, however, which cannot be repeated is irreversible. But all events manifested in time are new and hence unrepeatable. Time, therefore, is irreversible.

7. We have seen, furthermore, that an event in any history is uniquely differentiated from all other events. Actuality, however, is the manifestation of histories and as such a flux. The actual world of flux is, therefore, completely novel. The events in any present are new in relation to the events in any antecedent present. Only that novelty, however, is remarked and connected with attraction, surprise and wonder, in which the difference relations are comparatively great. In the flux of actuality, nevertheless, whatever is, in so far as it is a particular, is new.

8. It is owing to the nature of actuality as an evanescent flux—an incessant streaming up of novelty—that the characters of uncertainty, risk and to some extent, impotence apply to the conditions of actual existents and in particular to living things. The new is the unmanageable. With the best of intents on the part of humans, with the keenest of plans, the actual world still slips from under the fingers of control. Hence it is, that the most penetrating theories of practice or policy may fail in actuality where blind chance sometimes favors the obtuse. Hence it is, moreover, that intelligence may in some cases lead rather to

failure than success—the ignorance of an unforeseeable detail overturn an ambitious program of control. Fortune is ineradicable. Consider, to take a striking example, the excellent plans of the Athenians in their Syracusan expedition; its disaster following from the unforeseen chain of causes starting from the mutilation of the Hermæ. The elements of regulation, indeed—the control of events—are themselves incorporate in actuality and are carried along with the flux of the whole. It is a common thing for men to find that they have accomplished in actuality what they set out to avoid or that in accomplishing their object they have concomitantly brought about its inutility. The flux is more subtle than the keenest wit.

9. Recalling now the problems which we indicated for our present study we refer to that one which is concerned with the existential categories cognate to actuality; we mean the categories of the possible and the potential.

The relation between the events in a history and between histories themselves is causal (Essay on Causation, par. 6). The interrelation of motions in space-time is the manifestation of the causal relations of event-series (Essay on Space-Time, par. 55). Now those events which enter a history causally—and a history is a causal series—can be actualized in that history. Those which do not, cannot. This point is important for it determines the character of potentiality.

10. We have seen that that is possible which is embraced in the implication of the independent i.e. whatever can participate in being. And every particular is possible; the realm of existence includes every possible particular. The being of a particular, in fact, is its logical possibility and this is non-temporal. There is, however, a secondary species of possibility related to time i.e. to actuality. By the previous paragraph those events which are not causally related to a history are not actualizable in that history and those which are, are. Now that species of possibility which issues from the causal relations which determine the actualization of an event in a history, is potentiality. The potential is the unactualized part of a history. Those new events in a history which are unactualized constitute the potentiality

of that history. The potentiality of these events is determined by the causal relations which integrate the history.

11. The difference relations, moreover, between the actualized and the unactualized parts of a history constitute the character of novelty (par. 5). But the unactualized events in a history comprise its potentiality. With all potentiality, therefore, there is a concomitant element of novelty and whatever event comes into actuality is in some degree new. If we plant a seed we may be able to infer from past experience something of the nature of the thing which will result but we cannot discern the difference relations which, in its particularity, it will possess. There will be about it an irreducible element of the new. But the new, in the uniqueness of its particularity, is unpredictable. All potentiality, therefore, because of the invariance of its conjunction with the new contains an element, more or less great, of the unpredictable.

12. We are now prepared to inquire into the relations not only between an actual present and the potential events which form its extension but between any instance of actuality and any other possible particulars whatsoever which are contained in its existential world.

First, the actual unfolds in space-time. The possible, exclusive of the actual, whether the merely possible or the potential, is not manifest in space-time. Hence there is no space-time boundary between the actual and the possible. To assume such would be to predicate space-time categories outside of the realm of space-time itself which is contradictory. Secondly, the actual is identical with the immediate content of sense perception. Sense perception, however, and imagination—imagination is that form of perception in which we perceive possibles—differ only by grades of vividness. But the perceptual present which constitutes any instance of actuality is associated with an imaginative complement (Essay on Awareness, par. 16). There is, therefore, no final boundary at all between the actual and the possible. They merge into one another and vary only by the gradations of vividness coincident with the extension of imaginative scope.

13. We have seen, moreover, that all possible particulars exist and that the logico-ontological possibility of a particular

constitutes its non-temporal reality. It can neither be effaced nor altered nor set out of the relations in which it has its existence. Those things which we imagine, dream or perceive in any other way—as well as other particulars—are existent possibles i.e. real existents. Personal Gods or God, saints, angels, fairies, devils and the whole train of mythological beings fall into this category as well as all literary characters. They are all ineffaceable real existents. But in their status as possibles they may still be and in many instances are vitally related to events of actuality. In so far as these possibles approach, through imagination, the events of actuality they enter into the causative factors which determine it, and they cannot be omitted in the consideration of the relations which make that world what it is.

14. Greek history as it was would be impossible without Apollo or Athena; Christianity, without the Virgin or the Devil. No explaining in terms of pure actuality will ever be able to explain away either Apollo or the Virgin or the others (always excluding the application of contradictory predicates to them). They are there as causal factors and they are more irreducible than any actual facts, since the latter cease to be facts immediately as they cease to be actual. English literature without Hamlet or German literature without Faust would be equally impossible. If these characters and their influence were removed we would have different and hence other literatures. But these things, which we now mention by way of illustration, are taken from the remoter realms of fancy. The causation of possibles, however, is effective in the most common and immediate affairs of practical life. The prices of daily commodities are always determined by a possible supply even though it may never become actual. The taxes of a city or country are levied in terms of possible needs. The whole actual world of life is continually conditioned by possibles. Men spend their lives avoiding possible ills, fearing possible dangers and desiring possible goods. Actual life, in fact, is orientated around possibles most of which will remain permanently outside the sphere of actuality. And thus the causal network which determines the character of the actual embraces in its relations items whose existence is in the realm of possibles. And the events of actuality cannot be adequately

described without indicating the possibles to which they are causally related.

15. Now the causal conditions of each perceiver differ. This follows from the nature of existence: perceivers are particulars and particulars are unique. Therefore the actual worlds of different perceivers differ (Essay on Awareness, par. 12). There are as many different actual worlds i.e. perceptual presents, as there are perceivers. And every perceiver has his own world of facts. Actuality as a collective whole is an aggregate of private worlds.

16. But the components of actuality are histories and histories are particulars. Particulars, however, as we have seen, are comprehended in universals and hence in the whole implication of the independent. Hence particulars have characteristic similarities and in all particulars there is a basis of similarity. The content of actual worlds, however, is composed of particulars. Hence all actual worlds have common elements and no actual world is wholly disparate from others.

17. We have, furthermore, to recall that the events which make up histories are causally interexistent. No history is an isolated event-series—nor is any event confined to one history. Every event enters a multitude of histories and, therefore, histories i.e. particulars, intersect, overlap and have events in common. Now actual worlds are composed of histories and histories in so far as they have events in common are alike. Actual worlds, therefore, may be alike and contain the manifestation of a common event. Two or more particulars, in other words, can perceive the same event. The same event may enter two or more actual worlds. Now the nexus of common events in a complex of actual worlds constitutes a public world. Owing to the common characteristics of particulars, for any given set of actual worlds there is a public world.

18. From its nature it follows that an actual public world will be included, to a greater or less extent, in private actual worlds. Perceivers are themselves histories and causally related to other particulars. The nature of the perceivers is not inde-

pendent of the things to which they are causally related. The nature of a history is not, in other words, independent of its causal environment. Hence similar perceivers will have similar causal environments. Where, however, perceivers and environment are alike their actual worlds will have an extensive scope of commonalty and the public world for that set of perceivers will tend to coincide with the private worlds of individuals. Hence among the same species of perceivers the public world will tend to constitute a large element of actuality. Where, however, perceivers differ their causal environment will differ and their public world will have a narrower relative scope. Public worlds, in short, in relation to private actual worlds, tend to be extended or restricted as the perceiving histories with which they are connected are similar or dissimilar.

19. Since, however, actual worlds differ it is necessary to inquire into certain primary factors which determine the nature of an actual world and in particular those which determine a public world.

20. Perception is selective. Of all possible particulars we only perceive certain ones and these constitute the actual world. Which particulars are selected *in* and which are selected *out* of perception, however, is dependent largely on the associative relations which they maintain with the emotions. Now an inquiry into the nature and properties of the emotions is an intricate subject which we shall not undertake at the present time but which we shall consider in a subsequent essay. We may point out, however, that the emotions are connected with wants and desires and these are generated by biological needs. The fundamental biological needs are economic and sexual. Out of these comes a variegated and complex ramification of other needs and desires which determine the emotions which comprise the affective life of the individual. But the emotions tend to determine the events which are selected in perception and which, hence, arise in the actual world. How closely the emotions are concerned with what we see and what we do not see has been exten-

sively indicated by well-known studies in the psycho-pathology of common life. The actual world is, therefore, biologically determined. It is, what it is, if not wholly at least largely, because of the biological demands of perceiving particulars.

21. Now the association between the emotions and their objects is socially conditioned i.e. emotions become connected or associated with objects for a number of reasons, but primarily because of the nature of the social environment. The effect of mass suggestion is dominant in determining what objects will, and what will not, cause emotional response. Let us take a number of common examples. In psychological experimentation men are found to overlook nonsense syllables but see written words. Words, however, are social phenomena and their affective associations, the results of social usage. Again the different types of symbols for sex differentiation which humans respond to and hence tend to see are determined by the different social groups in which they arise e.g. the veil with the Turks, small shoes with the Chinese, etc. The theatre, indeed, is filled with socially conditioned stimuli, not only present in scenery and costume but in gesture, mannerism, accent and intonation. These are by social usage associated with particular emotions. There is little doubt that many of the peculiarities in a play presented by actors from the Elizabethan stage, were such to occur, would not be seen—would simply not be perceived—by a modern audience unfamiliar with the character of social life prevailing in that age. Perhaps, however, one of the clearest instances of the effect of social suggestion on perception is to be found in the differences in the character of perception arising from different occupations. The sailor sees things on the horizon which the landsman misses, the doctor sees particulars not evident to the layman, the painter perceives in a landscape what a surveyor does not see, and the surveyor sees points and relations which quite escape the painter and so on for the other occupations. Now all of these things—seen and missed—are not determined to be such by social causes only but the vast majority of them are to a predominant extent. The occupations themselves are social phenomena and the groups which they represent are subject to

the prevailing psychology of the occupation. The individual in the group is moulded by the mass suggestion of the group.

22. We conclude then from these and similar observations that we see, for the most part, what we are trained to see i.e. what is associated with our emotions by social suggestion. Now we do not mean by this that we see everything but merely notice what evokes our interest. Such a distinction is inadequate. We mean that we actually see some things and other things, because of the influence of the group, we do not see at all. We perceive, to repeat, what we are trained to perceive and we are trained to perceive by societal causes. These causes, moreover, are general for a given group. The public actual world for a given group, therefore, is a societal product. It is a consequence of selective perception induced by social suggestion.

23. But, in addition, the public world is the world of science i.e. the world which science aims to describe. Science is not interested in private actual worlds since they are peculiar to their perceivers and unverifiable by other investigators. The world of science, therefore, is also a societal product. We shall in the subsequent essays see further into the significance of this proposition.

24. Now the type of things suggested by the psychology of a group to its members is, as we have seen, determined by the culture of that group. Therefore different cultures determine different public worlds. And there are as many public actual worlds as there are different social groups with different cultures. The culture of a group is, moreover, in continuous development: it varies with succeeding generations. The public actual world, therefore, for one generation is not that for another. Where the cultural difference is great the difference in the actual world is great. Hence, for example, the actual world of the primitive is quite a different thing from that of humans in so-called advanced cultures.

25. Again the factors which tend to modify a culture as it develops from generation to generation tend to change its actual world. Of these factors education—especially in developed communities—is one of the most powerful. The education of a community, therefore, tends to determine the public actual world

which that community shall possess. Education far beyond the realization of men produces the actual world in which they live. Its power to modify things externally through technology is nothing to the unrecognized power it exercises psychologically on the selective perception of men—a power which determines that world, out of the number of possible worlds, which becomes actual for them. It is a thesis whose significance remains to be struck into expression, that the value of a culture depends on the kind of actual world which it produces.

SCIENCE

1. The examination of science focusses on two essential points, namely, the character of a scientific object and the nature of a scientific law. With respect to the first we have to ask: what constitutes data and what is the status of the physical world; with respect to the second: what is the validity of scientific generalization and what is the content of a scientific system? Let us begin with the former.

2. Data are taken from the actual world of the observer. This world is the aggregate of things perceived exclusively by sense-perception. Hence data correspond in kind to the senses. They are visual, tactual, auditory, olfactory, etc. But actuality as we have seen is a flux. It involves a constant ingression of novelty. It is a continuity of *presents*, but each present is ever-vanishing. Nothing particular in actuality abides. An item of actuality is, therefore, beyond the grasp of temporal cognition. It cannot be described because it is past and no more actual before any account of it can be given. The actual is incorrigibly elusive.

3. No actual object, however, is a physical object. A physical object is an imaginary construction built on the actual as a basis. The physical world correspondingly is an imaginary world—none the less, however, existent—which includes the actual world as a component. All that, in a particular, is imaginary which is not directly evinced by the senses, i.e. that which is inferred rather than actually perceived. The element, however, of inferred content, in physical particulars, yielded by the perception of humans is especially great and is for the most part preponderant. This is consonant with, and follows from, the relation which we have previously considered between the world of actuality and that of possibility. The two are in no wise asunder. Actual things merge into possibles by imaginative degrees and there is no distinguishable boundary between them. What is inference and what is perception in any physical particular is not

possible to discern since the actual, owing to the non-temporal transition of the awareness relation, is ever slipping away even under the gaze of critical attention. It will not wait either for analysis or comparison.

4. There are certain elements in a physical object, however, which are clearly actual and others which are clearly imaginative. If we see a building it is clear that we see only a fraction of it and imagine the rest. Again, as we have said, the other side of the moon is imaginary. Indeed the moon itself appears from the earth to be a silver disc. When we make it a sphere differing by a certain measure from the size of the earth we do so by imaginative inference. A physical world, therefore, is constituted by an imaginary construct which is applied to actuality.

5. The supplementation of actuality by such a construct, brings with it a marked advantage for analytic investigation. It renders the actual world conformable to a kind of a priori interpretation. The new in any present, unless it transcends unessential variations in the qualities of particulars, can thus be fitted into the old, the unfamiliar into the familiar. The physical world, as contrasted to the kaleidoscopic flux of actuality attains stability, regularity, temporal duration and perduring identity. It becomes continuous in space, durable in time, distinguishable and divisible. Actual things in such a physical world comprise a system of pointers which, as parts, indicate an unseen whole with which they are coördinated. They form the fragments of a design whose lacunæ are filled in with products of the constructive imagination. The physical world is thus real in the same sense that literary characters are real. I.e. it is a construct. It is a device for locating and describing perceived particulars just as the celestial sphere is a device for locating and describing the stars. It must, however, be congruent with immediately given perceptions i.e. with actual fact. This is a limitation not placed on the type of imagination which perceives the characters of fiction. The vivid concreteness of the physical world, however, is nothing other than the emotion of belief, arising within an individual perceiving history, which assents to its own imaginary constructs. In so far as this belief is confirmed by the actual world of the perceiver it passes into conviction. The

conviction may then become so indurated that subsequent and conflicting facts will not shake it. There are many instances where it persists in opposition to, and in spite of, actuality. An example of this was evidenced in the attitude of the church towards Galileo's discovery of the satellites of Jupiter.

6. A physical object is thus built by the conjunction of an actual thing with an imaginative construct. The actual, however, is full of shifting differences and a physical construct to be satisfactory must concord with and embrace in itself these differences. Otherwise it is called a mere fiction. Now common sense (as opposed to science) is not interested in the complete plurality of these actual differences but primarily in those which have some practical and conational import. Hence if it imagines a physical world which gives it the power of arithmetical calculation and therefore numerical control over physical objects its end is fulfilled. In an army of soldiers, one soldier is like another and individual differences are irrelevant. Each soldier is an operational unit and in so far as he is like the others he is for purposes of control a physical object. In a flock of sheep it suffices in general that they are all sheep and can be enumerated and led to slaughter. Common sense is not concerned with differences below the level of obvious practicality. Such undifferentiated physical objects, however, are not satisfactory for science. Science strictly speaking ignores no actual differences. It deals, moreover, in measured differences and requires an exact fit of the actual into the physical. It demands a physical picture in which all observable differences in the actual are accounted for. It cannot attain this picture with the undifferentiated objects of common sense. In these too much is ignored. Minute differences are overlooked and it is precisely these that have to be accounted for. In order to attain its end, therefore, it employs a dual process of division and diminution. The process may be illustrated as follows:

7. If we are given two houses which differ in size and shape it is sufficient in general for common sense that they are two physical objects, seen in part and imagined as wholes, which serve as dwellings. But if we examine further into their differences and try to account for them, it does not suffice to

imagine them in this general way. If we find that they are both composed of bricks we may divide them up imaginatively into these objects. We can thus account for differences in size by the arithmetical ratios of the numbers of bricks which they contain and we can account for their differences in form by the different spatial relations of these bricks. We thus have a physical system which takes into account actual differences. Let us suppose, however, that it is found that the bricks themselves differ. We then apply the same processes of division and diminution and imagine the bricks as agglomerations of grains of clay. We then consider the houses to be, instead of piles of brick, masses composed of grains of clay. In this manner the differences not only in the sizes and shapes of the houses are accounted for but those of the bricks that compose them. Now actual objects, themselves, are indivisible. This is not because they are not present in space-time but because they are irrevocably gone before they can be divided i.e. divided either in imagination or in actuality. The augmentation of the actual, however, by an imaginative supplement produces a physical object which has spatial and temporal continuity and is hence divisible. It is through the division of physical objects, as we have just illustrated, that differences in actual objects are interpreted. As in the example of the houses just given, the division of the physical object is carried to minute degrees but not to infinity. It is repeated until the elementary physical object attained is sufficiently diminutive to account for differences as they appear in actuality. It would be, of course, rash to assert at any time that the last possible division of objects had been performed and that the ultimately small physical unit had been reached. One could never tell whether a new actual difference might not appear which would require another division of the hitherto ultimately minute physical object.

8. By these processes of division and diminution, thus, a physical world of minute elements has been fitted onto actual differences. The latter have thus been rendered susceptible to an interpretation which considers them as mathematical functions arising from the arithmetical relations of these elements. The processes have continued—first considering common physi-

cal objects as composed of parts, and these parts, of parts, and so on until the molecule is reached and then the atom, then the electron and the proton. In this way the physical object becomes a compound of minute units. It is not yet clear that the last named division can yield a satisfactory account of all factual differences.

9. The processes of division and diminution, however, are not applied to ponderable physical objects only. They are also applied to the relations of these objects expressed in terms of motion and energy. In order to account for dynamic differences evinced in physical things instances of motion have been progressively divided until we have, for example, minute waves to account for such phenomena as refraction. The same is true of energy in order to account for such phenomena as cathode rays. We find hence that science presents an extreme diminution of the elemental units of matter, motion and energy. In this diminution each is contemplated as relinquishing characteristics proper to it on a larger scale. There tends to be a growing likeness between them. Hence with the advanced division of matter, motion and energy, their minute units tend to converge and coalesce into an ultimate quantum which furnishes an interpretative basis for the macroscopic differences of each.

10. Thus the physical world issuing from the scientific imagination goes, in its refinement, far beyond that of common sense. It conceives the flux of actuality as existing in a dynamic system of related quanta which are definite and discrete and more diminutive than anything they are used to account for. In this way physics has aimed (and has succeeded to a noteworthy degree) to strike a law of definite proportions for the whole physical world. If it finally succeeded—if it completed its program—it would have a perfect fit of the actual into the physical world; of empirical data into the conceptual scheme of science.

Our concern here, however, is not with the discussion of such a law. It is rather with the exposition of the relation between the imaginative supplement in a physical object and the actuality on which the object is based i.e. with the exposition of the nature of the physical objects referred to and employed in science.

11. There are as many actual worlds as there are perceivers since the actual world is dependent on the peculiarities of perception pertaining to any perceiving subject. Imagination, moreover, is a form of perception and varies likewise with individuals. The physical world, however, is an imaginative extension of the actual. There are as many physical worlds, therefore, as there are perceivers. Each perceiver has, to some extent, a private physical world. Since for a group, however, private worlds have common elements, there is, for any number of perceivers, a public physical world of greater or less scope which is common to them. In so far as the perceivers are directed to employ the same imaginative supplement for their public world of actuality, they perceive and adopt the same physical world and this becomes the standard for the group. As the group works together in social intercourse it tends thus to attain a common physical world.

12. A public physical world in so far as it fits the actuality on which it is based has certain marked advantages. It can be confirmed by a number of investigators—a feature which is entirely lacking from private worlds. Science, hence, is not interested in private physical worlds. It can say nothing about their validity since science is a social institution. It cannot reduce their differences to common uniformities because these differences, as private, are not subject to communication. Science is, on the other hand, concerned with the attainment, for purposes of the interpretation of actuality, of a common public physical world. Hence in an advanced community the physical world tends to be that which the physicists produce for it. The physicists in other words make the physical world for the rest of the community. Thus the history of physics becomes at once the history of the physical world. Or rather, it shows the different physical worlds which have been adopted by human groups. All of these worlds have existential being hence none is, in its own rights, false. The selection of a physical world, however, as we have said, is a means of interpreting actuality. Whether the physical world is the most desirable means of providing such an interpretation is a question which is not answerable by an easy affirmative. There are considerations, which

we shall discuss later, which tend to show that it is not. The physical world offers some very severe drawbacks when employed as a means for the interpretation of actuality. It has been, however, the means hitherto used in the endeavor to attain such an interpretation.

13. Since the physical world must conform to actuality the method of its construction involves, first of all, the processes of the observation and the collection of scientific data i.e. the recording of facts. This leads us to a consideration of scientific data and the actuality from which they are taken.

14. The things which appear in actuality are neither non-existent nor representative or other things to which they are related as images. Real existents are event-series or histories. They exist in the realm of being, in the totality of their relations, irrespective of perceptual change. They *are*—and their being and their possibility is one and the same (Essay on Existence, par. 11). Nothing impossible could ever become actual and whatever becomes actual is possible. But that which is possible, *is*—not partially, but instantaneously (cf. present essay, par. 43) and in its totality. Hence real existents are not quality-less substrata represented by perceptual objects. They are in part precisely what is manifested in actuality. The particulars which appear in actuality are, considered in terms of their complete logical implications (which are not, however, also manifested in appearance), real existents. There is no question here of an unknowable something behind what appears, which operates, as it were, behind the scenes to produce an apparent object. The things that we perceive are presentative not representative. They are part of the world of real existents, with the difference, however, that we perceive them fragmentarily and in succession and not in terms of the whole complex of difference relations which they enter.

15. By observation we mean sense perception and nothing other than sense perception. The observation referring to plain actuality, however, is unsatisfactory for scientific purposes. The actual object is always vanishing and hence it cannot properly be distinguished on the one hand, nor named on the other. A

name can only attach to an object which is not fleeting. Facts which are not namable, however, are defective for the purposes of science. Such facts are not subject to report or communication and communication is essential to the construction of a public physical world. Without communication there is no basis for the mutual modification of their conceptions by different investigators. But it is out of such modifications that a public world is conceived. Hence the immediate data of actuality in order to become accessible to science are reinterpreted in terms of physical objects. Physical objects are imagined as definitely extended and as having continuity in time. Such objects can be made the subject-matter of investigation and report. Thus scientific data are not immediate expressions of plain fact but are based on objects which are partly imaginative. They are data which can be reported, collated and confirmed. The mass of such reported data is the totality of scientific data.

16. The distinction between reported and immediate data is highly important for science. Reported data refer to the past. The actual present can never be the object of science. These data constitute a history in so far as history is considered a chronicle or narrative of particular events. The body of scientific data make up the content of natural history. The systematization of natural history is nothing other than science. Science thus is the systematization of the past—it is the construction of a physical world, conformable to law, out of the records of events that have antecedently occurred.

17. The reported data which make up natural history are unordered. They have to be examined, classified and compared. They have to be brought under categories according to which they may be ordered. Such data when collated constitute statistics. When statistics are so arranged as to show their arithmetical relations they form the groundwork for functional laws: linear laws, power laws, exponential laws, growth laws, etc. and these make up a large body of scientific generalization. Now such empirical laws are said to be derived from fact. This assertion, however, requires qualification. It is to be observed that by the time the scientific facts which constitute statistics are attained the actuality from which they are derived has passed

through a significant transformation. It has in the first place been modelled into a perduring physical object which is subject to observation and description. Secondly, it has been envisaged under a class and given a name. But the number of classes into which a thing falls are infinite. The class, therefore, into which it is put—the class selected to designate the thing—reflects the interest of the investigator. It is classified for an end and the classification reflects one aspect of the thing only. The class under which the thing is placed reflects the nature and knowledge of the investigator as much as the nature of the thing. There is, consequently, an *a priori* element in all statistics. Statistics appear as they do, among other reasons, because the point of view of investigators who collate them is what it is. This point of view is determined by the condition of science at the time of investigation. Statistics thus are constructed in terms of the point of development of the science to which they pertain. They are not immediate data but represent the imaginative elaboration of the facts of actuality transformed to make them accessible to current scientific understanding. Owing, moreover, to the circumstance that the foundations of scientific generalization are statistics a philosophy of statistics is absolutely essential to an understanding of the validity of science.

18. Since the uniformities in reported data furnish the basis for the induction of principles which make up science the accuracy of such data is a matter of fundamental importance. The question therefore of the nature and possibility of error in scientific data arises.

19. Error in immediate perception cannot occur since that which is perceived, is, and it is exactly as it is perceived. The actual is one and the same with the perceived (*Essay on Actuality*, par. 1) and hence error is not to be looked for in sense perception. Scientific data, however, are reported data derived not immediately from the actual flux but from the physical world. But reported data are not identical with their content of reference. They involve nomenclature, language and communication. They are related as symbols to the things to which they refer. There can therefore be a discrepancy between their content of predication i.e. of meaning, and their content of desig-

nation i.e. of reference. Such a discrepancy constitutes an error. Scientific data, hence, are subject to error even though the perceptual actuality from which they are elaborated is unimpeachable.

20. This error may arise in a number of different ways. There are four ways, however, which are particularly important. The first is concerned with the various kinds of error in counting. In counting, for example, the number of facets in the eyes of a fly, the facets are all seen but they may be miscounted either by duplicating or omitting a count. The same applies to any objects whose data involve counting. The psychological probability of error, of course, varies with the nature of the data. Frequently the objects to be counted, however, are great in number, small in size and uniform in shape, and these characteristics tend to make miscounting especially probable and particularly hard to detect.

21. Secondly, there are errors in the reporting of measurements. Measurements are taken from instruments and they are reported as definite quantities. The actual world, however, is indeterminate. Below a certain degree of refinement we cannot distinguish measures. We read 1.001 cm. as 1 cm. If we try to check our reading the actuality that we originally had has vanished. We can only make another reading for another *present*. But in so doing we do not escape the indeterminateness of the actual. We may enlarge our dials, refine our balances and magnify our scales; we may produce instruments whose indicators will multiply a minute change thousands of times but we still have the indeterminate reading or rather seeing—and sight is the most precise of the senses—which is no one of the points within the minute neighborhood of any definite point, since in actuality points are not seen. To report, however, as definite and determinate that which is not, is error.

22. This error, of course, may not be immediately damaging. It is assumed that different degrees of accuracy are needed for the support of different generalities. Accuracy within given limits is to be obtained according to the exigencies of the occasion. Since the possibility of refining instruments, though not without limit, is exceedingly great, it is said that accuracy can be ob-

tained in physical measurements to any desired degree. It is a curious thing, however, that although accuracy can be obtained to any desired degree, science always needs a further degree of accuracy than it gets. The reason for this lies in the indeterminate nature of measurements in the actual. This indeterminateness leads the scientist on in a rhythmic process of extension of generalization and refinement of data. It is in the indeterminate element in the actual data that the scientist seeks confirmation of hitherto unestablished hypotheses. The rôle, therefore, which this element of indeterminateness in actuality has played in the history of science is particularly great. Indeed from ancient times down to the present physics has not changed fundamentally in method. It has been the transition from the macroscopic to the microscopic in measurements which has wrought the change in physical conceptions. Ptolemy knew the heliocentric astronomy of Aristarchus but rejected it on the grounds that, were it applicable, we should observe a parallax, owing to the earth's orbit, with respect to the fixed stars. No such parallax, however, being observed he concluded for the geocentric system. The parallax has later been discovered for some fixed stars. Hooke endeavored to prove the inverse square law for gravitation by measurements at different altitudes on the earth. Had his measurements been sufficiently fine he would have found the differences which his actual measurements did not then yield. The confirmation of Newton's law was delayed over a decade owing to the error i.e. the premature definiteness of the scientific data which he was obliged to work with. It is behind the veil of the indeterminate in the measurements taken from the flux of actuality that, for the most part, the proofs, as well as disproofs, of hypotheses lie. The error of premature definiteness in measurement hence has played a considerable part in the formation of physics and therefore, as we have seen, in the determination of the physical world.

23. We have, thirdly, a species of error in scientific data arising from the discrepancies between a private and public physical world. The physical world of science is the public world. Peculiarities, therefore, of a private world count as scientific error. No matter how true the report may be of the physi-

cal world which an investigator perceives if it cannot be corroborated by others it is invalidated as data. Scientists are always talking about getting rid of the human element in data. By this they mean stripping off the peculiarities of the private investigator. Far from getting rid of the human element by such a method they get rather what is essentially human, namely, those data out of all possible data which, owing to the nature of humans, are common to the race.

24. A fourth species of error in scientific data arises from actual misstatement in the report of observation. Such misstatement may arise from a number of causes and is perhaps more subtle than is generally supposed. It may be effected with the cognizance of the investigator or without his cognizance. In the former case it is, of course, a matter of fraud, which though rare, unfortunately has not been unknown in the scientific annals. In the latter case it may arise from inability in the accurate use of language. The reporter may say something more or less or other than he intended to say. The reader unfamiliar with the history of the actual observation from which the reports were taken would be without means of detecting this error unless his doubts were aroused by something striking and unusual. Such error is very apt to arise either from the emotional tendencies of the investigator (psychology has amply shown that misstatements and biases in expression arise from the emotional conditions of a human and owing to their source are undetected), or from the tendency to state things in an anthropomorphic way. Such statements may have descriptive value but they almost invariably state more than the investigator has actually observed.

25. Now these types of error by no means exhaust the catalogue of errors which appear in scientific data. They do, however, indicate the ever present possibility of such error. They evoke, therefore, the problem of the nature of valid data i.e. data which are free from error or in which error is reduced to a minimum. The idea that scientists are agreed on scientific data is a notion that can only be entertained by one unacquainted with scientific controversy. To dispel it, it is sufficient merely to examine the arguments presented in the periodicals and to consider the number of experiments the data of which are affirmed

by one investigator or group of investigators and denied by others. Such disagreements about data are present in every field of science but they are particularly prominent in data referring to questions of current discussion, namely, to problems which are on the frontier of scientific knowledge. These, however, are the precise points on which validity of data is essential. As examples we may consider the body of data brought forth in relation to the problem of the inheritance of acquired characteristics and the data presented as corroborating the general theory of relativity. Exactly what the results of the Michelson-Morley experiment are is by no means easy to discover. There are plenty of positive statements about them by individual investigators, but there are equally positive doubts by others. They all agree within limits but it is precisely in the doubtful territory that the crucial data lie. An examination of scientific controversy makes it fairly evident that assent and dissent to proposed data are not wholly independent of the agreement or disagreement of the data with the theories supported by the judging scientists.

26. Since, therefore, error and dispute are rife with respect to scientific data certain conditions are laid down which distinguish acceptable from non-acceptable data. If the report of an event is made which has possible significance as scientific data, the report to gain recognition must have the commendation of a known investigator. Reports from any source indifferently, whatever their accuracy may be, if they remain unsupported by any accredited scientist, are ignored by the scientific world. Consider, for example, Mendel's original report on his studies in the heredity of peas. The prestige of scientists, thus, is a factor in determining what data shall be initially considered as eligible. Eligible data, however, still have to be confirmed. Now if they are confirmed by investigators of prestige they gain acceptance in proportion to the number and prestige of the investigators who confirm them. If, however, there is a conflict between investigators such that some confirm them and others do not, there is then a balancing of the prestige of the investigators and those with the greater prevail. Since all men cannot undertake to confirm the data for themselves they have to take them on the basis

of their faith in others. This faith is nothing other than prestige.

27. Scientific data thus are far from consisting in all the possible facts of experience. They consist, indeed, of a very small relative proportion of them. Data must first become eligible and secondly be confirmed. Both of these processes as we have seen depend on the prestige of the men engaged in research. But prestige is a social phenomenon. Valid scientific data, therefore, are those data which are selected out from the mass of facts furnished by actuality, and sanctioned by investigators of established prestige. The public world of science i.e. the body of valid scientific data is thus built up, in a large measure, on authority. It is, like the public world of actuality, a societal product. It is as much a selected world, a world agreed upon, as a world discovered.

28. By a scientific law we mean a uniformity in valid reported data. Data pertaining to any universe of discourse are integrated by a nexus of relations involving likeness and difference. Among instances of relations which are alike may be discerned a general form of relation which comprehends the instances as special cases. A falling body, for example, is an instance of the general law of gravity. The discovery of such general uniformities in data is the discovery of law. The expression of such uniformities is the formulation of law. The formulation of a law, therefore, is a general statement of fixed relations among valid, reported i.e. scientific, data. The method according to which the collection of data, and the formulation of law derived therefrom, is effected, is induction (Essay on Induction). Any scientific law is derived from an instance of the above process. As a single example, we may quote Boyle's law for the relation of volume and pressure of gases, namely $p v = k$.

29. Now a scientific law for humans is (1) a generality applicable to pertinent valid data (2) a product of and for the social life of men. It is derived from and applicable to the public physical world of science. This is, as we have seen, a societal con-

struct. The laws which are discovered in it are truly discovered, however, and are not, as the expression is, invented. They are *in* the physical world; not fabricated. They do not, however, comprehend the vast number of possible, therefore real uniformities, which exist in that world. They are selected out and their selection is determined by human interests. If, for example, humans were so constituted that their present light scale was below the level of visibility and instead they could see only by ultra violet rays, hence have a vision of much greater penetrating power, the visible world presented would be vastly different from that of the present. The science of optics in which men would be interested and which they would cultivate would differ considerably from that which they now have. Scientific law thus is made in terms of human actuality, of human understanding and of human interests.

30. It follows from the two requisites laid down in the above paragraph that a scientific law to be valid must conform to certain conditions. (1) It must be formulated in expressions whose terms are clear and distinct. The terms must be known either immediately or by definition. Propositions of which we do not know the meaning we cannot verify, since it is not possible to discern whether the verification is applicable or not. It is difficult, for example, in psychology to establish laws pertaining to instinct because the meaning of the term instinct is vague. (2) A law must be verifiable. It must be susceptible to comparison with data. There are, no doubt, many uniformities in the physical world which cannot pass into science, as law, because the subject matter to which they pertain is not accessible to observation. We may appeal to psychology again for an example. The propositions made about the so-called unconscious are *ex hypothesis* incapable of experiential verification. (3) A law must include and agree with all data pertaining to its content of reference. This is obvious and follows from the nature of a scientific law as previously defined. As an example, we may take the law of the conservation of energy, which at one time was accepted as fundamental. Since the discovery of radium its universal applicability has been difficult to establish and the law in its original form has been practically discarded. (4) It must in some sense describe

future data i.e. it must be serviceable as an instrument of prediction. It will either describe the general character of the new data which shall arise e.g. that an increase of adrenalin in the blood will produce some kind of bodily excitement the specific nature of which, whether aggressive or defensive, not being indicated, or it will describe a particular event e.g. an eclipse of the sun, or the eye color of the offspring of mated rabbits, etc. (5) A law must be the simplest available interpretation of the field of phenomena relevant to it i.e. it must involve the fewest possible assumptions; preferably only one. This is a demand made on science not by facts but by the human interest which interprets them. It facilitates description, economizes expression and renders the law applicable to a great number of things. Where the characteristic of simplicity is not present each application of the law requires a special assumption. Hence with such laws predictive power is practically eliminated. The principle of simplicity on the other hand gives a maximum of predictive and descriptive power with a minimum of assumed principles. (6) A law must be consistent with other laws which are equally or more firmly established. If it fails in this respect it is assumed either that the law itself is incompletely established or that the law or laws with which it conflicts are defective. Even though the law conforms to present data if it fails to harmonize with other established laws it cannot be accepted in its present state. No set of laws which are mutually contradictory will be accepted by science even though they are temporarily confirmed by data. To accept laws which are contradictory without modifying and harmonizing them would be to relinquish once and for all the postulate of the unity of science. This postulate, however, follows from the demand for simplicity—a demand which, however remote in fulfillment, science in advancing towards an intelligible system, will never ignore. Moreover, if the law A is consistent with experience and the law B contradicts the law A, then the law B contradicts experience and a science whose laws are mutually contradictory cannot be consistent with experience.

31. The above requisites for a law are summarized in saying that scientific laws must have the maximum consistency, the maximum exactitude and the maximum generalization. The laws,

however, which attain these standards to the highest degree are mathematical laws. Scientific laws therefore, during the advance of science tend to attain mathematical form. Science in so far as it develops towards its end draws closer and closer to mathematics.

32. Since laws are derived from data they reflect the nature of the data from which they are derived. They may be classified according to the characteristics of the data which they represent and the scope which they cover. With respect to the former we distinguish four kinds of laws: (1) Descriptive laws which predicate a common quality to a body of phenomena e.g. all mammals are vertebrates. (2) Correlational laws which express by means of a coefficient of correlation the proportional occurrence of one kind of event which respect to another. (3) Causal laws. Causation in so far as empirical science is concerned is nothing other than constant and complete correlation. The basis of causation in existence lies in the nature of existent particulars. Perception, and hence observation, is the awareness of a particular apart from its implication. But the causal relations of a particular are involved in and made evident by its implication (Essay on Causation, par. 6). Hence these relations are not directly apprehended by observation. In so far as they are evident in the data taken from actuality they are manifested as constant and complete correlations of events. Causation for science, therefore, is a descriptive term for correlation. Causal laws are, strictly speaking, correlational laws. This is evinced in the five methods laid down for the discovery of cause: the methods of likeness, of difference, of the joint application of these, of concomitant variation and the method of residues. These discover in events their constant correlations only. They do not propose to give an account of the *raison d'être* of this correlation. A causal law, therefore, represents simply a one to one correlation in time between the events to which it refers. (4) Functional laws. Functional laws represent the quantitative correlations of differences in objects or motions. They too are species of correlational laws. The correlations refer to relative variations in degrees of difference. Whenever one thing varies in terms of another functional law may be discovered. E.g. the laws of falling

bodies, Newton's law of gravity, Kepler's third law, growth laws of populations, etc. Functional laws are susceptible to mathematical expression and hence fulfill to a high degree the prerequisites of a scientific generalization.

33. Of the four species of law enumerated the correlational is the fundamental type. This is clearly evident for causal and functional laws. They are, in so far as objective observation is concerned, simply forms of correlation. The same, however, applies to descriptive laws. These predicate a common quality of a group. In so doing they merely express a one to one correlation between the presence of the common quality and the presence of the other essential qualities characteristic of the group. Thus all four species of laws are types of correlation and the fundamental characteristic of a scientific law is that of correlation. A scientific law is a discovered correlation in scientific data. There are as many possible laws as there are uniform correlations in the available data.

34. The second basis for the classification of laws is that of scope. Laws may be general or special according as they cover the whole or a part of the field of phenomena proper to a science. An example of a general law is the law of definite proportions in chemistry. An example of a special law in the same science would be any chemical equation e.g. $\text{H}_2\text{SO}_4 + \text{Cu} = \text{CuSO}_4 + \text{H}_2$. A science begins with reported data. From these it develops to special laws e.g. we may refer to Archimedes' law of buoyancy in hydraulics or Boyle's law in the theory of gases. From special laws it advances to general laws. In this process it proceeds from the less fundamental to the more fundamental. The coalescence of a special into a general law reveals the character of the former as an instance of the latter.

35. Now by the capture principle of scientific law we mean the capturing of a special law by a more general law i.e. the recognition of the special law as an instance of the general law. In this case the special law loses its independence and ultimacy and is comprehended in the logical system pertaining to the general and primary law. A very excellent example is the subsumption of Kepler's three laws under Newton's law of gravitation. It is by the capture of special by general laws that science

attains simplicity, coherence and unification. A captured law is deductively connected with the law which includes it. It enters the system which that law determines. When the special laws of a science are absorbed in such a system the science becomes deductive and simplified. It approaches the standard set down for science and gains validity so long as it is able to absorb new data without discordance. Now the sciences are to some extent interconnected. The laws of a prior science apply in the realm of a subordinate science e.g. the laws of physics in astronomy. Hence the general laws of a science may not only capture special laws within its proper science but also those in an ancillary science. In the shifting and modification that is continually in progress in the development of science laws from one science may be captured by those of prior science. Thus, for example, chemistry is becoming continuous with physics; much of experimental psychology with physiology; optics with electro-magnetics. Such an inter-scientific capturing of laws causes separate sciences to merge into one another and hence produces a rearrangement in the classification of the sciences. A rearrangement of this nature is accelerated during a period of scientific discovery. During such a period the classification of the sciences, rather than constituting a fixed hierarchy, is a mutating nexus of interrelated sciences. Owing to the gradation of dependence, however, in the series of sciences, the absorption of one law by another or of one science by another occurs from the more antecedent to the more dependent sciences and though the process may involve considerable alteration, it gravitates towards a constantly more integrated whole. In the conception of a complete science all laws are captured by one; and in completed science, all sciences are captured by one science whose laws are instances of one fundamental law.

36. Let us now assume that a science becomes unified through the capturing of special by general laws. We then have to ask: what will the perduration of that science be; how stable will the laws remain; can scientific laws change? Now as we have seen, the *sine qua non*, the absolutely fundamental condition to which a scientific law must conform, its ineluctable requisite, is concordance with fact. A scientific law is a working hypothesis valid only as long as it agrees with the data of observation. Ex-

perience is the ultimate criterion of a law. One contrary instance which cannot either be discredited or brought under the law is sufficient to indicate its defectiveness. The law, hence, must remain tentative as long as new and contrary data are possible.

37. The realm of existence, however, contains all possible differences in particulars (Essay on Existence, pars. 6 and 11). Out of these differences those can be actualized i.e. those are potential, which lie in the causal world of an awareness relation (Essay on Actuality, par. 10). Only potential particulars can and hence do affect science. This follows from the principle that scientific data must be derived from actuality. Now novelty we have seen is simply a difference relation between the actual and the potential i.e. between manifested and unmanifested particulars. Potentiality therefore is persistently novel. Its newness is limited only by the range of variation in the local causal world. Scientific law therefore is never final but changes with new and different data. These are always possible and potential, and hence there is no end to science. Science is interminable. An ultimate scientific law could never be demonstrated as such. To do so would necessitate a demonstration that no future fact could disagree with it. But by indicating the inherent element of novelty in potentiality we have indicated that such a demonstration is not available. History shows, at least in the case of Newtonian physics, that if a law prevails for a century and a half the scientific world acquires such massive belief in it that it is considered ultimate. The longer the law prevails the more firm becomes the belief that new and contrary data will not be discovered. Owing to the ponderous effect of prestige psychology on scientists the belief that such data will arise approaches zero (speaking roughly in terms of the history of science) as a limit, after about two centuries. After this period scientists commence to deny proposed facts or the possible validity of observations which conflict with the accepted theory. Despite, however, the intense psychological certainty which can be engendered in behalf of scientific laws there is no final assurance for their immutability so long as they rest on actuality as a factual basis.

38. The mutability of scientific law, however, does not destroy or diminish its validity. It is important to see this in order

to make a proper evaluation of science. (A scientific outlook which is valid at one time is not necessarily valid at another.) Any scientific description is valid for the phenomena which it fits, much as the definite integral of a function is valid within the assigned limits. Hence any scientific present may be true. By a scientific present we mean the body of scientific laws prevailing at an instant, which describes the available scientific data at that instant. The introduction of new data constitutes a new present. Now as long as scientific laws fit a given present of data and fulfill the conditions of simplicity, generalization and consistency laid down for such laws they are valid for that present. It is clear that the natural science of one present may be radically different from that of another. Yet both systems are valid if their generalizations are consistent with and correspondent to available data. The history of science is not altogether the history of past false as compared to present true conceptions. It is the history rather of different scientific systems each more or less valid in terms of the scientific present which produced it. A natural science can only be properly evaluated in relation to the nature of its factual present. That science, however, which comprehends and unifies a greater number of difference relations i.e. of scientific data, in its scope, fulfills the object of science to greater degree than one whose scope is limited to fewer data. Progress in science is, therefore, the production of more comprehensive, not of essentially more valid systems. Assuming that a concord of principle and data is attained, that system which comprehends the data of another system together with additional data is the more perfect science. Thus the validity of a scientific law is independent of its mutability. The scientific truth of a law does not depend on its perduration but on its present applicability. Scientific laws may be both true and changeable if by the quality of scientific truth is meant conformity to fact together with maximum generalization. Or, in other words, scientific laws are true within the range of data to which they apply.

39. There is, however, another quality which a more developed science i.e. a science erected on a wider basis of fact, possesses. It tends to have a greater capacity for the absorption of new data. This is an advantage of considerable importance.

When new data outrun hypothesis a science falls into confusion. It approaches the disconnected multitudinous of the actual world of particulars which it endeavors to unify. It loses simplicity and becomes fragmentary. Relief from the situation comes through the digestion i.e. the reduction to uniform principle, of the superabundant data. There is a rhythmic progression, therefore, in the development of science which emphasizes first the accumulation of data and subsequently the subsumption of the data under principles. Now by the power of digestion of a science we mean its ability to absorb new data without jeopardizing its simplicity or without producing the need for essential modification. The more comprehensive its original basis of fact the greater the power of digestion tends to be. Theories are either made *ad hoc* or they are found to be a priori valid for new data. *Ad hoc* theories or laws are indicative of defect and are undesirable. A science with a broader foundation of data possesses to a greater extent laws which, with respect to new data, are valid. It is required in the face of new data to resort less to *ad hoc* principles.

40. We have seen that scientific laws may be both valid and mutable. The circumstance that a law may, in the future, be modified does not remove its present validity, provided, of course, that it is valid. But there are more fundamental bases than the foregoing for the validity of natural science. The realm of existence includes all possible particulars (Essay on Existence, par. 11). And it is constituted of causal worlds of related histories (Essay on Causation, par. 12). These histories are non-temporal and hence independent of actuality for their existence. They are for this reason called the realm of real existents. The difference relations in the realm of real existents form the bases of space-time and hence may be called real space-time. They are, however, immutable as distinguished from the apparent difference relations in the space-time world of actuality. The latter type of space-time arises in the actualization of a local world. A local world is a given causal world of real existents containing an awareness relation. It is local relative to that relation. Actuality is the manifestation of the real local world of existents under the limits imposed on awareness by the finite character of

histories. Scientific data, however, are derived from actuality. There is, hence, a relation between real existence, actuality and scientific data. Wherever actuality arises, it arises in a causal world of real existents and the data derived from such actuality are determined by the character of the events and their relations, which are proper to that world. Now things, events or particulars are numbers (Essay on Number as a Category of Being, par. 6) ; they are nexa of relations and a nexus of relations is a number. A world of real existents, thus, is a complex of relations, i.e. of numbers, and hence is expressible adequately only in mathematical form. Let us enter for a moment into some considerations which render this evident. Whatever particular is, is in difference relations with other particulars, i.e. it is in ratio with other things and the ratios thus extant, as we have seen, are constitutive elements in the nature of the thing. Ratios, however, are related among themselves in proportions and proportions in further proportions and so on indefinitely. Proportions, however, are nothing other than equations and equations are functions. Now functions are the relative variations in the difference relations constitutive of things. Differences, moreover, are either of kind or degree but in the world of real existents there is, between any differences, a dense series of differences (Essay on Difference, par. 11) hence differences of kind are in fact differences of degree and vice versa. I.e. all possible differences exist and differences are continuous. The realm of existence therefore is an infinitely interrelated nexus of functions, which functions enter constitutively into the nature of particulars, and in these functions are involved, not only quantity, but all the other differences i.e. all other qualities, which particulars have. Differences in the realm of existence are illustratable by the derivative of a function which expresses instantaneously the tangents of all points on its curve. The appearance of these differences in actuality is the successive manifestation of the function. The histories themselves which constitute this realm are nexa of functional relations. Real existents are in other words existential equations. The realm of real existents is a mathematical complex. (It is, of course, understood that we define numbers not as calligraphic marks, but as relational systems. Mathematics is

not to be identified with notation.) Since this complex, moreover, determines the empirical data actualizable in it, the mathematical expression of the complex represents the *terminus ad quem* of science. By discovering the mathematical order of the world of real existents it discovers the system of conditions under which data can appear in psychological space-time i.e. in actuality. It thus produces a non-temporal, deductive, relational structure which, in so far as it is perfected, develops a constantly greater probability of permanence. The function of science, thus, becomes the discovery of an adequate expression for the mathematical syntax of the local world of real existents.

41. At this point we shall consider the historical i.e. developmental relation between mathematics and empirical science. Mathematics goes in advance and discovers not this or that law, but the forms of all possible laws; empirical investigation follows and fits the data to corresponding laws. Mathematics discovers the laws; natural science discovers that they are laws. Thus natural science advances just as rapidly as mathematics and no more so. When there is a lull in mathematical investigation a limit is set for the development of the natural science. Ancient astronomy, for example, waited for the development of Euclidean Geometry and Trigonometry. Modern astronomy was born with Calculus. The prevailing theory of physical relativity was only possible after the development of the geometry of Riemann and the four dimensional continuum of Minkowski. Before the number e was discovered growth laws were impossible and before Taylor's theorem, curve fitting and hence the discovery of pertinent empirical laws was not generally feasible. Natural scientists before modern times could not have developed either physics or astronomy to the point that they have now reached because the absence of logarithms would have prevented them from making computations of sufficient magnitude or of sufficient minuteness.

42. The question now arises: if science attains a complete mathematical interpretation of the local world of real existents will its laws be permanent? This amounts to the question: can there be a translation of the awareness relation from one causal

world to another? In answering this question we shall make a few relevant definitions.

43. By instantaneity we mean the relation of interexistence. By an instantaneous realm we mean a totality of difference relations integrally interexistent. This is pertinent to an analysis of the relation between causal worlds. Since nothing in being is unrelated existential causal worlds are not unrelated. Their separation is not absolute but is a relative separation in the mathematical difference relations which constitute the bases of different space-times in the whole instantaneous realm of existence. One world is distinguished from another by possessing: (1) fundamentally different traits e.g. a two dimensional as compared to a three dimensional spatial system (2) incompatible traits e.g. in a spherical world the sum of the angles of a triangle cannot equal 180° . But between any differences there is a dense series of differences (Essay on Difference, par. 11) hence there is no absolute relational break between worlds; there is, in the realm of existence, no ungraduated discontinuity. There is simply a relative discontinuity in that differences are greater and less. Where, however, there is relation there is connection and where there is connection the awareness relation may be translated. The mere facts of fancy and imagination indicate that indefinite realms are available for awareness outside the actual world of perception. Hence while a given world may be described mathematically there is only a partial guarantee that the awareness relation cannot be carried insensibly but causally into another local world—a transition which would produce in science the necessity for another mathematical adjustment. Something like this happened when Alice went into Wonderland. There are many wonderlands which mathematics has to offer. Such a transition might also develop in case the perceptual cognition of a group of organisms passed from a three dimensional to a four dimensional space-time—or, in another field, from vision by infra-violet to vision by ultra-violet light. This may be made more clear by a consideration of correspondent elements in different worlds.

44. By a correspondent element in two existential systems we mean an element in one system which differs from, but is

homologous to, an element in the other system. Such elements we shall call inter-existential correspondents. A series of such elements we shall call a correspondent series. By way of illustration we may say that a triangle in a plane system and a corresponding triangle in a spherical system are inter-existential correspondents. Or again homologous structures in organisms e.g. the flipper of a whale and the forelimb of a quadruped are inter-existential correspondents; or a sound wave and the electro-magnetic waves used to convey it. Now since the realm of existence involves all possible particular differences the variation between elements in a correspondent series is graduated and different worlds merge and shade into one another. There is hence a differential functional relation between the elements in a correspondent series. Granted the proper mathematical instrumentation the deduction not only of one world but of a series of worlds is possible from the proportional differences of one from another. As an example we may quote from topology the projection of a globular map onto a plane surface producing a different but similar figure with corresponding points. We thus envisage the realm of existence as stretching away in an infinite series of graduationally correspondent worlds. It is the purpose of science to select out of this series that local world which coincides with the actuality represented by the valid data of any scientific present. It is better, however, for science not to be too provincial with respect to its local world and to admit a certain amount of intermundane or inter-existential cosmopolitanism. Owing to the continuity of differences in existence it is highly doubtful whether any local world can be separated by a final conceptual demarcation from neighboring worlds more or less continuous with it by inter-existential correspondents. This certainly becomes more evident as items of sub-electronic diminutiveness are dealt with and the indeterminism which is said to be found in this realm is nothing other than the inability of the scientist, based on the existential gradient of infinitesimal differences, to finally mark off his local world from other possible i.e. real worlds. Whether, moreover, a mathematical structure might be discovered which would comprehend, by reason of correspondent series in related systems, not this or that but all exis-

tential worlds, we cannot pretend to determine. Such a science, however, would exceed in scope the bounds of the natural science of any given world and would involve a mathematics more generalized and complete than that which we now have.

45. Natural science reaches its maximum descriptive power in giving the mathematical syntax of that world within which the data of empirical investigation are manifested. In so far as it does this it furnishes an expression, in linguistic symbols, of its local world of real existents. Now this local world, just because it is not actual but is, rather, the field of actuality, is not conceivable in terms of perceptual space-time, which, as we have seen, is a product of the awareness relation in the manifestation of existent differences and is not essentially pertinent to real existents. Hence a local world of real existents is non-picturable and is describable only in mathematico-logical terms. The endeavor to picture it in terms of images compounded from sense perception can be compared to the efforts of a deaf man to construct the music of a Beethoven symphony from the dots and lines of the score.

46. We have made, however, in the preceding exposition, two propositions which, when set in confrontation, require elucidation. We have said that the world of real existents is non-picturable. We have next said that actual objects, namely, the things which are picturable in the highest degree, are nothing other than the appearance of real existents in perceptual space-time. The process, however, which makes this possible is a very common process which occurs everywhere in everyday life. It is nothing other than the fragmentary, inadequate and incomplete cognition of a thing, which cognition when rectified changes fundamentally the whole meaning of the thing. If a man hands in a check at a bank which is endorsed at the wrong end the banker may temporarily overlook the endorsement and the check is an entirely different thing for the man and for the banker before he sees the endorsement from that which it is after he sees it. In the first case it is a worthless piece of paper, in the second, a valid demand for specie. The more, in short, that the system of relations, in which a thing exists, becomes evident, the

more it changes its aspect. Now if some one totally ignorant of banking, say an Australian primitive, saw the check he could not in his remotest imagination picture the concrete meaning of the check even if he saw it with microscopic distinctness, with his two good eyes. Exactly that which he could not see would be the fundamental nature of the thing. Now we may refer to another and closer example from mathematics, namely, from the province of complex numbers. The taking of an actual for a real existent would be analogous to the taking of the real element in a complex number for the whole number, on the grounds that the imaginary element (which might more accurately be called unimaginary) is not picturable on a line representing natural numbers. The point is here evident that if we wish to attain an understanding of the complex number at all we must leave the line of natural numbers and enter a different universe of discourse accessible enough to logical conception but inaccessible to the psychological imagination. The so-called real element of the complex number is here comparable to the actual element in a real existent. It is a component of the number but considered in itself it is something different from this whole number. Again three dimensional organisms in a four dimensional world could conceive, but not imagine, the world in which they existed.

47. Now from the non-picturable character of the world of real existents certain things follow with respect to the development of science. Two of these we shall discuss.

It follows in the first place that as science advances towards its maximum descriptive power i.e. towards the mathematical exposition of the world of real existents it will relinquish the physical world which, as we have seen, is an imaginary continuation of actuality. The physical world like other myths will always maintain its place among the products of the human imagination but will lose its power as a medium of interpretation for science. This is not to be regretted on esthetic grounds such as those advocated by the critics of the gaunt and colorless world of primary qualities conceived by modern classical physics. On the contrary the trend referred to is liberating rather than confining. Far from creating an inexorable spectre of ponderable matter such as that of Newtonian physics, the realm of real

existents, aimed at by science, comprehends not only all the qualities of the actual world but is infinitely richer in differentiation and variegation than either the actual world of sense perception or the physical world of imagination. It not only includes all of their qualities and relations but a universe of qualities and relations not accessible to the psychological imagination i.e. not picturable. Not only is it not colorless but includes a range of colors far beyond our little scale of seven hues. The other colors, however, are visible only through the medium of mathematical vision—and similarly for an infinity of qualities of which we have no perceptual inkling.

48. But this is a digression. Our principal purpose here is not the esthetic vindication of the world of real existents. It is rather the indication of the narrowness of the physical world as a basis for scientific description. Of the three worlds—the world of actuality which is a flux and the product of immediate perception, the physical world which is a compound of flux and permanence i.e. a world of apparent change, and the real world of existential histories which is non-temporal—the physical world acts as an imaginary medium to translate the fluent data of the first into the mathematical syntax of the last. As such it has a didactic purpose. But when science advances to the point where a system applicable to fact requires logical, non-picturable members, the physical world becomes an obstacle rather than an assistance to its progress. This leads us, however, to our second and corollary proposition.

49. Of two systems otherwise fulfilling the conditions of scientific law, the one of which is picturable and the other non-picturable, the latter (i.e. the non-picturable system) is, for the interests of science, to be chosen. This, of course, is equivalent to the relinquishing of the physical world as a means of scientific interpretation. For this thesis we give four reasons.

I. The retention of a picturable system militates against the origin of new conceptions.

Where picturability is a requisite to understanding it is obvious that humans will not conceive what they cannot picture. Precisely what they cannot picture, however, may be involved in a needed scientific conception. Such was the case with respect to

the conception of action at a distance which some men rejected because they could not picture it. There was a time when it was difficult for men to imagine a world in which there was no absolute up and down. It required a certain effort of the fancy to conceive of the antipodes. In mathematics minus numbers, irrational numbers and imaginary numbers have been successively looked on as scandals because they did not have any apparent picturable counterparts. It is very probable that the invention of a symbol for zero was considerably delayed because of the bondage in which the human understanding was held by the demand for the picturable. In our natural world we are much in the position of two dimensional organisms on a spherical earth. They would have to develop a three dimensional mathematical scheme in order to account for their observed phenomena, even though such a scheme would entirely exceed the limits of their concrete imagination. If, however, they were limited to picturable explanations such a scheme would never suggest itself to them.

II. Secondly the retention of a picturable system hinders the acceptance of new and valid conceptions. The difficulties experienced in the acceptance of Copernican astronomy are too well known to need rehearsing. The Copernican astronomy although it seems easily picturable to us, presented grave difficulties to men of the early renaissance. Owing to these difficulties its reception and dissemination met with considerable resistance. But the heliocentric system of astronomy did not meet its first opposition in the renaissance. It was examined and rejected in ancient times. Ptolemy found it impossible to conceive the earth as rotating without throwing off, by centrifugal force, the loose objects existing on its surface. It was owing to the inability to escape from the picturable that the genius of Aristarchus was lost on the world until the time of Copernicus. The same type of ingenuous prejudice hindered men from conceiving of light and heavy bodies as falling with equal rapidity and of objects as moving in space without being pushed. It was left for Galileo to dispel these notions by his discovery of the principle of inertia and of the laws of falling bodies—conceptions common enough at present. At present, however, we observe the same demand

for picturability resisting the conception of relative, as contrasted to absolute, space-time.

III. Thirdly the retention of the picturable tends to the prolongation, in science, of concepts scientifically superfluous. The crystalline spheres of Aristotle, devised to render picturable the mathematical epicyclical astronomy of Eudoxus held the acceptance of the scientific world for over a millennium. They were finally abandoned only because they could not be imagined as fitting into an infinite spatial universe containing separate and scattered solar systems such as the universe described by Copernican astronomy. Their modern representative, however, the ether is a hypothetical substance imagined *ad hoc* with properties requisite to account for electro-magnetic waves in a world of absolute space-time. Traditional fictions, such as that of ether, many scientists find as hard to give up as children do the idea of Santa Claus. The discovery, however, of a mathematical space-time in which the laws of electro-magnetic phenomena are enunciated without the necessity of assuming an ether, on the grounds of simplicity and consistency fundamental to science itself, renders that concept unnecessary. The non-picturability of equations for electro-magnetic phenomena is irrelevant to the exactitude of their factual application and hence to their scientific validity. It is the lack of recognition of this irrelevance of picturability in scientific description that gives rise to the empty perennial questions such as: What is matter? What is electricity? by which it is implied that there is some mysterious and occult substratum underlying the phenomena to which they are referred. Instances of matter, however, as well as instances of electricity are nexa of relations i.e. systems of existential equations, about which there is nothing more mysterious or occult than the proposition that $2 + 2 = 4$.

IV. Fourthly we summarize the preceding arguments in saying that the relinquishment of picturability (and this amounts to the relinquishment of the physical world) as requisite to scientific description releases science for an unlimited future development and, to a greater extent than ever, elevates it above the peculiarities and prejudices of any particular age. Where science is reduced to a synthetic imaginative picture which

cannot fit an actuality which is too complex for it, it remains in a perpetual confusion, from which it cannot emerge as long as it interprets all things analogically in terms of perceptual pictures. When it is freed from this bondage it can spontaneously advance, in consonance with actual fact, to greater and greater syntheses less determined by the limited psychology of men.

Science deals with facts, diagrams and theories. The facts only are actual. The diagrams are data schematically arranged (e.g. a chromosome map) not to picture, in any perceptual sense, the facts, because the facts are forever gone before they are even analyzed, but to present an existential correspondent indicating the relations into which reported data can be arranged in order to interpret the facts. Diagrams are means of communication; they are a language. They are as much unlike actuality as a word, the content it represents. The actuality is fluent and the diagram is considered as relatively fixed. Now the representation of actual change in stable diagrams is dynamic diagrammatics. Natural science is a system of dynamic diagrammatics comprehended in a universe of mathematical functions. It is in the development of such a system unhampered by irrelevant demands for picture-producing visualization that progress in science lies.

Lastly it is to be said that, in considering these things, we have to stand in profound admiration for the genius of Plato who saw them in their essentials, at a time, more than twenty-one centuries before the discovery of calculus, when his contemporaries were describing the celestial system in terms of crystal-line spheres.

COSMOLOGY I

1. We propose in this essay to present some problems whose adequate treatment cannot be consummated in science itself and can either be attained in metaphysics or nowhere. For this there is a clear and pertinent reason. The problems employ concepts whose validity and implications presuppose non-empirical cognition. Science can verify that for which it can give confirmation. Concepts, however, which lie outside the range of such confirmation lie outside the descriptive power of science. Such concepts are nevertheless constantly and necessarily used. Their employment in scientific problems is valid only in so far as empirical data are relevant to them. But since their whole meaning can never be found in empirical data the treatment of them in terms of such data alone can never be complete. We shall refer to three such concepts in the present and in the following essay: two from the domain of physics and one from that of biology. The concepts referred to are: matter, force and life. It is not our object to present a final discussion of the problems connected with these concepts. Such would exceed the scope of this study. Our purpose is restricted and something that can be done within a limited number of fundamental considerations. It is, namely, the orientation of these problems with regard to the present point of view.

2. First let us consider the nature of matter. Matter is a generic term for physical objects. Every physical object is an instance of matter and every instance of matter is a physical object. Physical objects, however, are partly or wholly imaginary. Every element of a physical object which is not actual i.e. is not perceived, is imaginary. Hence matter is principally imaginary and though not actual, existent. In our three dimensional spatial world matter is always considered as solid. This, how-

ever, is a piece of anthropomorphism. In a two dimensional physical world matter would not need to possess this quality. Since the basis of matter is perceptual space-time, perceivers in any space-time world will imagine matter in terms of the space-time of their world. Hence humans erect as material objects physical things with three dimensions.

3. Now since physical objects can exist independently of perception (Essay on Awareness, par. 18), matter can exist independently of perception. It cannot be said, therefore, that all instances of matter are perceivable or can be perceived. There may be, for example, and hence is, a variety of colors outside of our color scale which we do not perceive. The same applies to a wide range of physical objects. It is not justifiable to say, therefore, that matter is the permanent possibility of experience since most material objects are not and never can be experienced. By experience we mean sense perception. Whether the material objects of the physical world enter or do not enter experience, is a point non-essential to their nature as material.

4. In physics since all matter is imagined to have mass it does have mass and will continue to do so until some instance of actuality is reported which does not behave according to the formula for mass, force and acceleration. There is, however, nothing a priori impossible in the occurrence of such an event. Even now in subatomic physics the invariability of mass is relinquished and the mass of an electron is considered as a function of its velocity. The definition of matter simply as that which has mass, therefore, is not satisfactory if the definition includes mass as an essential property of all physical objects.

5. Now we have seen that science in its progress passes from the picturable to the non-picturable, from the physical to the mathematical interpretation of nature. Mass, however, as well as matter is a physical concept. It is the property of a physical object. With the relinquishment, therefore, of the physical world and the interpretation of the world of existents as a nexus of histories i.e. as we have seen, as a syntax of existential mathematical relations the concepts, both of mass and matter, disappear or are interpreted not as physical phenomena but as constant or functional relations in events. We shall, however,

in the following paragraphs refer to matter not as a common matrix of mathematical relations comprehending the events in a world of real existents, but as the generic property of physical objects, as physical, since it is in this sense that the problems which we are to consider are understood.

6. Since space, as manifested in actuality, is nothing other than the actualization of difference relations in the world of real existents there is no such thing as an absolute void i.e. a space without any items which are spatially related. In positing space the events are posited whose relations constitute its nature. A space without any spatial items is a system of difference relations without anything that is different. It is hence contradictory.

7. This leaves the question whether there is a relative void i.e. a void between objects. By a void we mean a distance between spatial positions which does not contain any physical object. Now if matter is imagined as continuous it is clear that there can be no void. However great the variations of its density or however differentiated its instances i.e. material objects, if matter is continuous there is no point between them which is not pervaded by continuous matter. Hence every theory which requires the postulate of continuous matter requires also the postulate of the plenum i.e. of filled space. If matter, however, is imagined as discontinuous then the postulate of the void is introduced. Physics has fluctuated back and forth, according to the exigencies of data and the applicability of hypotheses, between these doctrines of continuous matter and the plenum, on the one hand, and discontinuous matter and the void, on the other.

8. For the moment, however, we shall apply the problem of the void to the physical world. By a void, as we have said, we mean a distance between spatial positions which does not contain any physical object. A physical object, however, is an imaginary construct. It may or may not be perceived but it is not dependent for its existence on perception. It is rather inferred from perceived things and its character is imagined in consonance with the qualities demanded by the inference e.g. if a spark is observed to

jump between two electrodes it is inferred that there is a flow of electrons in the wires which lead to them. A physical object, thus, may be imagined where there is a phenomenon in actuality for which it can have descriptive significance. Since any spatial distance, however, can contain either an infinite number of imaginary objects or an uninterrupted continuum of material substance, there is an existential world in which no point of distance is devoid of a physical object e.g. ether. It is hence possible to imagine a physical world as a plenum.

9. It is, however, equally possible in a spatial continuum to postulate no physical objects between any two separated objects. There are local existential worlds of different spatial configurations and an actual world may conform either to those involving a void or those involving a plenum. The choice between the void and the full in the physical world is, therefore, entirely a matter of scientific convenience. It may be made in either way which fits the scientific construction of a physical world based on a given present of data and in either case be valid. Since, however, the two concepts are not only contrary but contradictory i.e. the full is not-void and the void is not-full, we have here a true disjunction and the two cannot be concomitantly accepted. Either one only or neither of the two can be adopted. In so far as both are employed the condition of consistency pertinent to scientific generalizations is infringed and the presence of so fundamental a contradiction in a science is indicative of unacceptable theoretical defect. The whole problem, however, for any scientific present is not whether a given physical world is a void or a plenum but whether the scientist chooses a world which includes a void or one which includes a plenum. Those who accept the hypothesis that matter is continuous assert its consequence that space is a plenum e.g. the Cartesians held this view in conjunction with their doctrine of matter. Those, however, who affirm that matter is discontinuous support the void. Now both of these positions have been maintained in physics. Since the development of the atomistic theory, however, the hypothesis of discontinuity of matter has gained great ascendancy owing to the brilliant successes it has attained in producing applicable generalities. But the plenum has not been excluded. Theories which demand media of action

have always been obliged to resort to a plenum to account for the translation of motion. Now physics has never been able to decide conclusively for one or the other hypothesis, namely, discontinuous matter and the void or continuous matter and the plenum. It has effected various tentative and incomplete reconciliations between these opposing hypotheses. It adopts the atomic view to describe the properties of physical objects e.g. the surface tension of a liquid, and the hypothesis of the continuity of matter to describe the translation of motion through media e.g. the translation of interstellar light. The reconciliation, however, has never been complete and has remained an ineffaceable contradiction in the domain of physical theory. It is highly doubtful whether the impasse will be resolved as long as the doctrines of separate and absolute space and time are retained. In the meantime physics vacillates between the two irreconcilable hypotheses. It emphasizes at one time the one, at another the other, according to the character of new data and the generalizing power offered by the respective hypotheses. In this manner, nevertheless, the dialectic of physical theory advances and expands, and the science is carried out of the picturable physical world of visualized objects into the mathematical world of real existents where the application of the categories of the void and the full are irrelevant.

10. The outstanding instance of the void, as indicated by supporters of that hypothesis, is interstellar space. The conception of a universe with such vast empty spaces, however, met with a difficulty. The analogical thinking of scientists, which endeavors to envisage the unfamiliar as an instance of the familiar, and to think of the existential world in picturable terms, resists the notion of action at a distance where there is no medium through which the action can be propagated. But the phenomena of light and gravitation furnish instances of apparent action at a distance. Hence it is assumed that if there is to be action i.e. the action of one body on another, there can be no void. Two physical objects separated by a void must be, in so far as physical interaction is concerned, mutually independent of one another.

11. This leads to an examination of the concept of action at a distance. Before entering, however, on this examination we

shall consider two other concepts logically antecedent to it, namely, force and cause.

12. The actual world is a flux. It can, however, with some degree of accuracy be fitted into an imaginary physical world of moving objects. In this physical world objects exist in sets of relations which we shall call situations and these situations can be divided and classified. It is possible to conjoin, in thought (1) some situations with motion or change of motion (2) some situations, not with motion but with succeeding situations which may involve motion and (3) some situations with rest. We have, for example, in the first either the absence of equilibrium or translational equilibrium; in the second unstable equilibrium; and in the third, stable equilibrium. Any one of these situations may change into the others designated: a situation of motion into that of rest, a situation of rest into that of motion, and a situation represented by unstable equilibrium into either rest or motion. The concept used to describe such changes of situation is called force. Force is a descriptive term indicating the conditions of change pertaining to situations which involve motion and rest.

13. When a change takes place in the relations of physical bodies the conditions representing the forces pertaining to a body are modified e.g. the changing positions of the moon affect the state of the hydrosphere and produce tides. This modification of one body concomitantly with that of another is action. Action in the physical world is simply the dynamic expression in objects of the changing relations of force between bodies. Hence by the action of one body on another we mean the variation in the state of one body arising upon the presence of another body.

14. Now the physical world is imagined in terms of the familiar phenomena of actuality. These show for any moment a multitude of correlative modifications. But those modifications which seem most constantly conjoined are the ones occurring in contiguous bodies i.e. bodies in contact. If men were as accustomed to a world in which the correlative modifications of physical bodies occurred only between objects at a distance from one another, as they now are to correlations in contact, they would

then find it difficult to imagine a world in which action at contact could occur. They would find themselves constrained to imagine a certain amount of distance between bodies that act on one another—even though it were microscopic—in order to account for the action of one on the other. But as it is, the physical world is imagined to be composed of ponderable bodies located in space and not acting on one another except by immediate contact. This obviously excludes the possibility of action at a distance and necessitates a doctrine of media to interpret phenomena such as light and gravitation. The latter hypothesis in turn necessitates the acceptance of the plenum and some kind of ether.

15. The essential elements, however, in physical action, the data from which media are inferred, are the correlations of events e.g. the presence of the moon and the swell of the tides. Now it may be possible to devise a description of all such correlations in terms of action through media, but in such a description the media are imaginary factors introduced to render imaginable a physical world already defined with certain a priori assumptions. In any case, if a mathematical description of the correlations can be given e.g. of the tides or the relative positions of the planets, which dispenses with media and simply expresses these events as instances of relations in a functional system of histories in space-time, the postulation of media can preferably be dropped and the phenomena under consideration be considered not as interactions of forces in this or that imagined physical world but as number-relations manifested temporally from non-temporal realm of real existents. If, however, a picturable physical world is retained, since there is an infinite number of such worlds, the thesis of action at a distance becomes simply a methodological device to be affirmed or denied as it gives a more or less satisfactory description of the data. Up to the present time the phenomenon of gravitation, provided a physical world of absolute space and separate time is imagined, has defied attempts to describe it in such a way that it requires action by contact through media constituting a plenum. Furthermore the Maxwellian equations for the propagation of light show that the latter phenomenon can be incorporated into a physics of relative space-time as nexa of events and hence be given a mathe-

mathematical description which involves neither the concepts of the void nor the plenum and dispenses altogether with the notion of physical media.

16. This, however, leads us to a consideration in terms of the present point of view of the problem of the relativity of space-time and motion.

We have seen that a particular is a system of difference relations whose arithmetical characters determines the nature of the space-time which they constitute when manifested in awareness. It follows that all space-time is relative in the sense that it is the partial manifestation, not of discrete substances (which substances we take to be contradictory) but of a system of relations which are essential components in the objects which they comprehend. The space-time of every existential world is relative in the same sense that the events which it involves are not independent of it nor it of them. There are, however, two kinds of relative worlds: those in which measures vary producing local spaces and local times and those in which measures when treated as constant for all localities yield results which correspond to valid data. In the former the functional differences of measures are calculable with the consequence that the results of any space-time locality with respect to another locality may be calculated, given the physical conditions of difference between the two systems e.g. their relative speed. Any body of data which cannot be described in terms of constant space-time measures is not susceptible to interpretation by means of an absolute physical world since an absolute world is simply a world in which relative measures are postulated as equal and constant. A physical world of absolute space-time is one in which the measure-units implied in the variables in the equations for motion receive no modification for different relative points of reference. Difference in position, in short, involves no relative difference in units of measurement. Spatial or temporal units can thus be arranged in homogeneous series which yield uniform independent variables. An absolute space-time world is, therefore, only a relative world in which change is by a priori definition describable in terms of constant units of measurement. We say a priori because a genuine varia-

tion of measure for different localities is empirically undetectable and hence any direct verification of the hypothesis of an absolute space and time, from observed data, is precluded. Now the essence of a relative world involving n dimensions lies (1) in the unification of the dimensions into a coherent mathematical system (2) the interpretation of perceptual space-time as a continuum in which different positions have different properties—properties which may vary functionally although the numerical designation of the measurements remains the same. In a relative world the idea of locality is mathematically dominant. The contents, however, of any space-time worlds are particulars and particulars constitute the realm of existence. This realm embraces an infinity of (i.e. all possible) existential worlds. The parts however of an infinite series may themselves be infinite series. There is an infinite number of different possible absolute worlds since there are as many absolute worlds as there are possible conditions under which space-time relations can be measured by constant units. There is, however, also an infinity of relative worlds, for the range of functional differences relating localities i.e. frames of reference, within a relative world is itself infinite. In the scientific selection of worlds, however, where a present of scientific data is interpretable on either of two systems, namely, an absolute or a relative space-time system, or where the proposed systems, though incongruent to some degree with valid data, have practically equivalent claims to correspondence, if the trend of science toward the mathematical and non-picturable, and away from the lag of the physical and picturable is pursued, the advantage and choice will fall definitively with the hypothesis of relative space-time. Where agreement with facts is attained the grounds for the selection of a scientific principle are, as we have seen, methodological. We have further endeavored to indicate that from the standpoint of scientific progress a non-picturable is methodologically superior to a picturable system.

17. Now the same conditions which apply to the choice between an absolute and a relative space-time apply to the choice between a finite and an infinite space-time. Of the three worlds:

the perceptual world of actuality, the imaginary world of physical objects and the independent world of real existents, the actual is always finite i.e. at any instant bounded by the limits of perception. The world of real existents is a nexus of non-temporal particulars whose difference relations are not metamorphosed into perceptual space until they are actualized. These difference relations in any local world are infinite. But although they form the mathematical relations which are the foundations of space-time they are not themselves physical space and the attribution to them of either finite or infinite distance would be irrelevant. One might as well attribute the color red to the square root of two or circularity to the quality of mercy. The world to which the question of spatial infinity pertains, therefore, is the physical world—the world erected imaginatively to supplement actuality. This, however, makes the solution of the problem, as in the case of the void and the full, or of absolute and relative space-time, methodological in character. The solution depends on the kind of geometry adopted for the physical world and this in turn depends on the character of scientific data. Physics can thus alternate between a finite and an infinite world as many times as the facts of observation demand the acceptance of this or that kind of geometry.

18. The liberation of the human mind from the confines of a single geometry has done much to render the problem of spatial infinity secondary. The concept of infinity becomes a very different thing in one geometry from that which it is in another and the difference is sufficiently great to make it necessary, when one is speaking of spatial infinity, to designate the kind of geometry to which his infinity is pertinent. Infinity is one thing in a three dimensional geometry of Euclidean space, another in a four dimensional geometry in which time is a fourth coördinate.

19. Now the type of geometry which is selected for the physical world depends entirely on the nature of data. That geometry is adopted whose equations apply most closely to the data of the scientific present. Of the possible geometries applicable to a physical world some yield a possible spatial infinity e.g. Euclidean geometry and some yield an unbounded but finite world e.g. elliptical geometry. A two dimensional organism on a

sphere, for example, would exist in a finite but unbounded geometrical system. If the sphere were so immense that it could not be circumnavigated or that its surface for short distances would be practically a plane the detection of its nature would be impossible without highly refined measurements. Any geometry in which the coördinates, sufficiently extended, return on one another yields a finite world. Such a world does not exist, as it were, in an environing space, of different dimensions, which extends to a possible infinity—it is a world in which the postulation either of another environing space or of an infinity of spatial distance is irrelevant and meaningless. The problem of spatial infinity thus reduces to the problem of the kind of physical world we are going to imagine in order to interpret accurately the data of actuality—a world whose geometry permits an intelligible spatial infinity or a world whose geometry excludes that concept. For one scientific present the one may be selected, for another, the other.

20. As science advances, however, away from the physical world, relinquishes it as a picturable construct describing data, elaborates the mathematical interpretation of actuality which renders such a construct irrelevant, the postulate of spatial infinity fades in significance and like other hypotheses of science becomes a matter primarily of methodological policy. As long as the realm of existence was conceived as containing only one world of particulars, namely, the physical world then imagined, the problem concerning its spatial extent, its finitude or its infinity, had a prominent position in cosmological discussion. Since that world was considered the one and only existential world the problem of spatial infinity was considered as containing an absolute disjunction and capable of definitive solution. When, however, this realm, namely, that of existence, is recognized as containing an infinity of existential worlds which involve the whole range of particular possibility, and when it is recognized that the problem of science is the selection of one existential world applicable to data out of this plurality of worlds, some of which are infinite, some finite and some outside of the relevance of spatial finitude or infinity, the problem of spatial infinity for any one of them, or for the one immediately adopted loses a position of primary significance.

COSMOLOGY II

1. We turn in this essay to the second field of science which involves dominant cosmological problems, namely, the field of biology. In the study of this field we are concerned with the problem of the nature of life.

2. The realm of particulars is, as we have seen, the realm of histories. But as living things are particulars, they are, like other particulars, histories. They are distinguished from other histories in a local world, simply by the difference relations of the events that constitute them and this means that, in their manifestation in actuality, they are distinguished by behavior. Those things, in short, which manifest irritability, growth, reproduction, nutrition, expulsion of foreign bodies, and in some cases regeneration, are living things. The event-series which lack these characters (or such other characters as biologists may find essential to the process of life) are marked from other event-series by the term inanimate. Life, hence, is behavior of a certain type and nothing else. There is no necessity of postulating a vital spirit or other supplementary agency which, if assumed, could only enter as an added event-series into a history constituting the living thing without possessing any more descriptive power than does the indication of the aforementioned functions. Moreover, since if it were imagined, it could only be done so by inference from these functions, its postulation, as part of the living individual would be gratuitous.

3. The doctrine of vitalism is sometimes proposed with an identification of awareness with the vital spirit. But as we have seen (1) awareness is a relation and not a substance; (2) awareness does not enter into the essence of any real existent (Essay on Awareness, pars. 4 and 25). The identification of awareness with a vital spirit is not effectible. It is not awareness which constitutes life since were that the case the cessation of awareness would constitute death. To what degree the awareness of other and lower organisms reaches, however, or to what degree aware-

ness may be present in a viable grain of wheat several years old, is a matter too problematic to serve as the foundation of any fundamental definition. Awareness and life may be concomitant; they are not identical. If two stones, for example, could be aware of one another they would still regard each other as dead. Life is not constituted by awareness or by hypostatized vital substances, but by the differentiation of the events in histories which distinguish these events as instances of a particular type of behavior.

4. If this is the case, it may be objected, there is no absolute distinction between the animate and inanimate since inanimate things may evince in modified degrees what are interpreted to be the characters of life. An ether drop for example may be made to ingest, and dispel a minute glass rod covered with shellac.* The objection, however, merely points out what it would be invalid to deny, namely, that there is no absolute point of difference between the animate and the inanimate. We have seen that between any two differences there is a dense series of differences and any point in a particular series taken as a division between the event-series which characterizes a living history from that which characterizes a non-living history, is arbitrarily chosen. Life is a matter of degree. There are unactualized histories which in their characters would bear, if actualized, the same or a similar relation to life which life bears to the inanimate and so on indefinitely since every possible history is comprehended in the realm of existence. We cannot infer, however, from the identity of living processes and behavior that life is a mechanistic phenomenon. The conceptions both of vitalism and mechanism are based on the posulation of a substantialized physics and each is far too restricted to comprehend the subject which it proposes to describe.

5. By mechanism we refer to a system of objects which change uniformly according to fixed laws of force, mass and motion and whose total quantitative relations remain constant in accordance with a principle such as the second law of thermodynamics. Now it is evident, from what we have said, that actuality, i.e. the perceptual world, is not a mechanism since it is

* See Bayliss, *Principles of General Physiology*, 1927, p. 3.

a pure flux and the uniformities of mechanism cannot apply to an infinite flux. In the world of actuality we do not have that change which involves an element of permanence but an unreserved fluency which is neither physical change nor permanence. Both change and flux are categories of psychological time.

6. But if we do not have mechanism in the world of actuality neither do we have it in that of real existents since the latter is an instantaneous realm which extends to an infinite nexus of number relations. Change and flux are both products of the actualization of the difference relations in the realm of real existents, for finite histories. Hence the field of mechanism is neither that of actual nor real existents. The dominion in which change, as distinguished from flux, occurs is the physical world and this, we have seen, is a partial interpretation of real existents composed of an imaginative construct applied to actuality represented in scientific data. The physical world, thus, is the locus of mechanism i.e. the place where mechanism is possible.

7. Now biological organisms like other particulars are histories in the realm of real existents. Like other particulars they appear in actuality as components of an ever-receding present, or as variations in the flux, and in the physical world constructed by science they are interpreted as mechanisms. Indeed, physical science, at least, that which accepts the Newtonian theory of absolute substantialized mechanics, can only, in order to fit them into its world, conceive of them as mechanisms. But we have seen that in the development of science away from the picturable domain of imaginative constructs towards the mathematical realm of real histories the physical world is abandoned as inadequate for scientific description and we have the data of actuality re-interpreted in terms of the mathematical syntax of real existents. Thus biology, like other sciences as it reaches its maximum descriptive power becomes mathematical and supplants the mechanistic interpretation of bio-organisms, considered as elements of a physical world, with the non-temporal logico-mathematical interpretation of them as real existent histories. Living things in other words like other particulars are systems of difference relations among existents i.e. as manifested in actuality, visible numbers.

8. It follows that, according to the present view—and our object here is to show the consequences of this view—neither the mechanistic nor the vitalistic descriptions of living processes offer other than tentative interpretations. The former involves substantialized concepts of the physical world such as apparent change, mass, force and physical motion which are themselves inadequate for the interpretation of existent things and the latter involves gratuitous assumptions, not verifiable and hence invalid in scientific research. It is unnecessary to point out that these two positions are contrary not contradictory hence not exclusive of other theses. It seems already that the dichotomy which they express, represents in terms of the physics of relativity, a milestone in the scientific past.

9. Since the problems concerning life are bound up with one another, that concerning the nature of life brings with it another, namely, the problem of the origin of life. By the origin of life we do not mean its origin in one place or another, e.g. the transportation to the earth of a living organism from another celestial body. We mean its postulated absolute origin.

10. It is obvious that the term *origin* here has a temporal sense and can only be conceived in terms of time. But we have seen that living things are histories in a non-temporal world of real existents. Hence the question of the origin of any one of these histories, and in particular a first one, is meaningless so far as it is a question of existence. Any living thing or any existent thing at all is essentially non-temporal and hence not subject to the category of origin. Figuratively it can be said that life is, or has been, as present at one time as another but this simply means that the world of existents is instantaneous (cf. Essay on Science, par. 43). In a realm in which the terms before and after, used in a temporal sense, are without content the question of origin is irrelevant. We might as well ask at what time π became the ratio of the diameter of a circle to its circumference or e became the sum of the infinite series representing $\lim_{\mu \rightarrow \infty} \left(1 + \frac{1}{\mu}\right)^\mu$.

11. As long, however, as science retains the physical world as an instrument of description the problem of the origin of life,

with respect to that world, will persist. But all propositions, as we have seen, involved in the construction of a physical world are methodological. Hence the problem can receive as many solutions as scientists find useful in coördinating the data from which they imagine the physical world.

12. But here a confrontation of theses arises. On the one hand the so-called law of biogenesis prohibits the postulation of the development of living from non-living things; on the other, the absence of fossil remains in the earliest Archæan and pre-Cambrian rock strata and the presumption that there was a geological period when prevailing conditions precluded terrestrial life, point to the conclusion that during some primeval age life on earth was not present. A resolution of the opposition of these apparently opposed theses is requisite within the field of natural science itself. The dialectic arising from this confrontation of hypotheses will carry science on indefinitely to successive constructions providing respective physical interpretations of the origin of living things—interpretations elaborated in terms of accumulated data. These interpretations, however, will always be tentative and subject to subsequent revision. This, however, simply means that from the standpoint of empirical science alone the problem can receive no adequate answer. It is possible that the methodological hypothesis which will conflict least with actual data will be found to lie in the thesis that life is without origin in physical time. Such a thesis, however, would almost certainly require, in view of the nature of geological history, the conclusion that living particles were transported to the earth through interstellar space by radiant energy or some analogous means. Any confirmation, however, of this conclusion by factual evidence will remain, at least for considerable time, outside the range of human investigation.

13. The problem of the ontological status of life i.e. of living organisms, leads to a cognate problem with regard to evolution. By evolution we mean alteration in the conditions of differentiation and coördination which pertain to a particular history or to a group of histories i.e. individuals. When the alteration advances from a less to a greater state of differentiation

and coördination, e.g. from protozoa to metazoa, the evolution is progressive; when it is from a greater to a lesser state of differentiation and coördination, e.g. in cases of atavism, it is retrogressive. Differentiation of the parts of organisms i.e. the organs and their functions, constitute also differentiations of organisms with respect to one another and hence determine their division into species. Organic evolution is, in short, a phylogenetic differentiation of histories whose modifications exist in continuous variation.

Now there are certain propositions with respect to evolution which we wish to affirm.

14. First, evolution is non-temporal. The complex ramifications of histories which constitute evolution is made up of constituent histories which, as we have seen, are particulars in the local causal world of real existents. The differences, however, which characterize the particulars in any existential world are compresent i.e. instantaneous (Essay on Existence, par. 12). But the differences which distinguish the histories of phylogenetic series are differences in particulars of a local causal world. These differences are, therefore, instantaneous, i.e. non-temporal. Evolution is, hence, non-temporal. It follows that the flora and fauna, the perceived biological phenomena, for any history at any present constitute a partial manifestation of the evolutionary process in the local world in which they exist.

15. Secondly, every existential world is evolutionary. This follows from the nature of difference. We have seen (1) that all possible differences exist (2) that all differences lie in a dense series (Essay on Difference, par. 11). It follows from these propositions (1) that all degrees of differentiation in any world of particulars are compresent and (2) that between any particulars there is an infinite series of graduated differences i.e. differentiation is continuous. But every existential world is causally integrated (Essay on Causation, par. 12). And every particular is a nexus of relations (Essay on Relation, par. 22) which is dependent on other particulars and hence part of a causal whole (Essay on Causation, par. 6). But a causal whole is an instance of coördination. This we shall discuss more at length in the following essay. At present we shall consider it as a postulate.

Every existential world thus is a differentiated complex of wholes causally coördinated involving continuous degrees of differentiations and coördination, according to the complexity of the particulars which they contain. But we have seen that the process of evolution is the non-temporal variation of the interrelated differentiation and coördination of particulars in a world of real existents. Every existential world is, therefore, evolutionary.

16. Thirdly, we propose the following proposition: the existence of an evolutionary nexus of particulars is independent of awareness. By this we mean that a system of particulars in evolutionary order neither goes into nor out of existence with the perception or non-perception of an actual present comprehended within it. Put more specifically the local world of particulars did not spring into existence with the opening of the first eye.

17. For this proposition we give two reasons, which reasons, however, do not exhaust the demonstration. First, an evolutionary world of real existents is non-temporal (Essay on Existence, par. 12) and hence neither the processes of origination nor effacement, which can apply only to a temporal i.e. an actual or a physical world, are relevant to it. To refer these processes to a world of real existents would be like referring them to the system of natural numbers. Secondly, awareness is, with respect to any real particular, a non-essential relation (Essay on Existence, par. 9) and hence its presence or absence does not determine the existence of such a particular. It determines the existence of actual, i.e. apparent, particulars only. Therefore an evolutionary world of real particulars is independent of the relation of awareness.

18. There are other reasons for this conclusion drawn not from the nature of real existents but from the character of imaginary physical objects. It is contradictory, for example, to assert that evolutionary particulars are perceptions which spring into existence with the opening of the first eye since that eye itself is part of the imagined world thus arising. The assertion, it is scarcely necessary to indicate, assumes the thesis it proposes to refute.

19. Now in the evolutionary scale of the local world in which we exist we come to organisms which contain in their histories the phenomena of feeling. The contemplation of such organisms, including humans, conducts us to the problem of the relation of feeling to the organism as a whole, namely, to that question which is generally designated as the psycho-physical problem.

20. The psycho-physical problem, like all other problems, presupposes in the positing of it, certain premises in terms of which it is intelligible. We shall endeavor to show, in the course of this study, what these premises are and in what sense they are gratuitous i.e. in what sense the psycho-physical problem is insoluble, because it is not a problem at all or, in other words, because it stands on untenable premises.

21. Before proceeding to do this, however, we wish to remind the reader that we do not propose to give *the* conclusive answer i.e. the unique and final solution to the problems concerning particulars which we have here evoked. Our thesis is (1) that the cosmological problems with which we are dealing cannot receive adequate treatment in science alone because they involve concepts which lie outside the scope of empirical research, and (2) that whatever the proposed solutions to them are, these solutions are rendered with respect to and in terms of a point of view and are by no means independent of the point of view from which they are rendered. Now in the previous essays we have purposed to give an explication of the present point of view. Our concern now, therefore, is the indication of the nature of the solutions which follow from this point of view with regard to the problems at hand.

22. The psycho-physical problem is laid down in the endeavor to elucidate the relations of two postulated components of an organism, namely, the physiological and the psychological components. We use the terms physiological and psychological rather than the terms body and mind because the latter are, in their present state, altogether too ambiguous not to be misleading. The dichotomy, however, of which these are the terms is the basis of the problem and it involves three fundamental prem-

ises, namely: (1) that the physiological and the psychological components of the organism are distinct (2) that they can be distinguished, and (3) that they fulfill certain mutually determined conditions with respect to the processes of perception, feeling and will. Already, in the formulation of the problem a certain flavor of undue substantialization is noticeable which gives it an artificial tone. Let us, however, consider these processes in order.

23. The first, namely, perception, we have discussed in a previous essay. Perception is the awareness of a particular apart from its ontological implication. Sense perception, e.g. vision, is an immediate mutative awareness relation possessing as terms histories in an existential world. It is a relation in the same sense that "being to the north of," "being to the right of" or "being greater than" are relations.

24. From this point of view there is no necessity and no grounds for the division of the organism into discrete and separate physical and psychological substances in order to account for the nature of perception. The fundamental properties of perception are not constituted by infra-organic but by inter-existential relations. Perception is not a process within an organism but a relation between existential event-series. The sensationalist theory of perception, the source of essential difficulty in the attempt to describe the relations between the postulated body and mind, is, from this point of view, completely discarded. The doctrine that our acquaintance with external things is constituted of sensations originating in the sense organs, carried to the brain and from thence transported into the mind where they are federated into perceptions which are assumed, with great conviction, to duplicate external things, finds no place in the present point of view. Indeed the body, including the nervous system and the brain are from this point of view not substances at all but systems of relations merged into a continuity of events. This produces an account of the nature of perception entirely different from that advanced by the sensationalist theory previously indicated. Wherein this difference lies we have partially seen. The following pages will include a continuation and supplementation of what we have already said. Let us, then, proceed to the more central part of the so-called psycho-physical problem and

consider the relations between the physiological processes and the feelings and, in particular, the concomitance in which they exist and which characterizes them.

25. The organism, as we have seen, is an event-series and this event-series is actualized by the non-temporal transition of the awareness relation. The manifestation of particulars in this relation constitutes an actual world of flux. The actual world of flux furnishes data upon which an interpretive physical world is imaginatively constructed. Now we have to ask with respect to any object: what is its status in actuality and what is the physical interpretation, derived from that status, with which it is identified. We ask these questions, therefore, with respect to the body and with respect to feeling.

26. In actuality, and it is with actuality that we shall be principally concerned, the body is exactly what it is revealed to be. What is revealed, however, is neither a physical body nor a pure, i.e. a non-bodily, feeling. The physical body is a construct based on that which is actually perceived and hence is not actual. Feeling, on the other hand, as pure feeling never arises since every feeling which becomes manifest is a feeling with this or that bodily quality. Thus the history which constitutes the organism is neither a substantial body nor a non-physiological feeling. The qualities of actual feeling *are* the body and the body is nothing other than the qualities of the feelings which constitute it. E.g. the body is kinesthetic feeling, visceral feeling, sensory feeling, etc. The events, therefore, which constitute the organism are neither psychological nor physiological, both of which categories represent imaginative constructs, but, for lack of a better expression, bodily feelings. The organism is the fluent actualization of a history of feelings whose qualities, i.e. whose difference-relations, are essential to the events themselves and constitute the characters of the body. Any individual who attends to what he actually perceives of himself and not to what he infers or imagines will recognize that he is a succession of bodily feelings. His various affections have a definite physiological character which involve the feelings of energy, fatigue, exhilaration, depression, etc. When he looks at that which is called his own body, his arms, his legs and other organs, he perceives in the actual

form of visual perception the items which he recognizes as identical with his bodily feelings. The actualization of these bodily feelings in visual perception is the manifestation of one and the same flux of events in the various qualities which these events have.

27. From the character of the organism thus described follows the basis for the distinction of what we call our own bodies from the bodies of other individuals. Our own bodies, namely, are those which we recognize as bodily feelings. Where these feelings are present our bodies are present; where not, not. The one is identical with the other. If, to use a somewhat extraordinary example, whenever we saw a woodman strike a tree we felt the axe entering our own body we would identify our body with that of the tree and the identification would be valid. Foreign bodies are those alone which we sense partially as concurrent event-series disconnected from the affective states which constitute our own persons. It is precisely this affective disjunction which constitutes their otherness in actuality and gives them the status of mere objects whose circumstances are, relative to ourselves and our immediate feelings, matters of indifference.

28. It follows, secondly, from the character of the organism as a history of affects that the examination of the events which constitute it always shows a concomitance of the elements which are analyzed out of it as physiological and psychological components. These physiological and psychological components in actuality are one and the same hence concomitant and inseparable and, in fact, not distinct at all.

29. This, however, goes to the root of the psycho-physical problem. That problem arises from an artificial dualism, irreconcilable with the factual concomitance indicated. The problem arose from a physics which, in its construction, left out of account the necessity for accommodating physical to psychological data. A physics which postulates perduring atoms, which combine and separate according to mechanical laws, although it may attain a high degree of perfection in objective scientific exposition, can never, if it treats a system in which the data of feeling e.g. pleasure, pain etc. are excluded, be finally satisfactory either for biology or psychology. Biological and psychological

organisms, however, are physical objects and the data which they present cannot be ignored much less controverted by a physics which, since they are as much a part of the actual world as any other data, is obliged to include them. Hence a science of physics in which the phenomena of feeling are unintelligible is neither complete nor acceptable. The endeavor to resolve this conflict led to the bisection of the organism into the two generically different components which we have pointed out. This division, in turn, constituted a radical and insurmountable source of difficulty in accounting for the characters of sentiency presented in the factual data of life.

30. The organism when split up into physiological action, on the one hand, and non-corporeal feeling on the other, vanishes or falls apart into two things entirely different from it. It becomes an imaginary compound of irreconcilable elements—a construct made out of things, by definition opposed to and exclusive of one another. As an integrated process of bodily feeling, however, it is a unit and indivisible. The event-series which constitutes the body is one and the same with the event-series which constitutes the feelings. The postulated concomitance of the two is nothing but their unity.

31. Feelings, to continue, range from touch, taste and other so-called sensations to the emotions and higher visceral feelings. There is one common character, however, pertinent to all feelings, namely, that they are kinesthetic. By kinesthetic we do not here mean merely muscular feelings but any feelings involving motion i.e. an urge towards or away from something. Such urges are the items which, in the imagined physical world, are translated as responses to stimuli, external or internal. They are ubiquitous and omnipresent in biological phenomena. In the actuality of a perceiver, however, such an urge is nothing other than the feeling of striving; striving and kinesthetic feeling are one and the same. The greater the kinesthetic element in any instance of feeling the greater the striving. Striving is involved in every feeling from the reflex wink of an eye to the execution of a highly wrought purpose. It is all striving in some form or other. Hence the organism, i.e. the unit of body-feeling, is a confluence of strivings and striving is the essence and nature of life.

By this we mean that striving and actual behavior are identical. An organism is an event-series of strivings.

32. Now by will we mean the actualization of striving. Will is the awareness of striving as a continuous eventuation in the manifestation of a history. It follows that men can no more cease striving than the ocean can cease rolling or the planets can stop coasting through their orbits. The event-series which constitute strivings are non-temporal histories in the realm of real existents. They are written, as it were, indelibly on the face of existence. In order to exist at all in actuality, they exist as the manifestation of strivings. These strivings constitute the passion for persistence—for preservation, in actual existence which forms the essence of the individual organism. No theory and no circumstances can extinguish them. They may be guided and re-directed and even pointed towards their own negation, but they cannot be effaced. Even in their negation, however, they merely affirm the actuality of their presence for it is only their frustration which reverses them and turns them on themselves. It is owing to this fundamental character of striving that arises the concealed fierceness of biological relations which reaches its maximum in humans and which, as men become aware of it in practical life awakens a sense of horror at the blindness of its operation and the inevitable tragedy involved in its unfolding. It is owing to this character of the organism that humans insert their talons into one another—that, following the basic striving of which they are the expressions, they coerce, control, subjugate or destroy.

33. Since will is, therefore, the manifestation of striving in awareness, humans discover their will i.e. their strivings, just as they discover anything else. They do not, in other words, will what strivings they shall have but, on the contrary, they become aware, in time, of the strivings which constitute their will. Particulars are, as we have seen, event-series (Essay on Existence, par. 7) which are non-temporal and interdependent (Essay on Causation, par. 7). Organisms are particulars and their manifestation in actuality is the manifestation of interdependent events—in this case, strivings. The strivings thus manifested are, like other events non-temporal, inter-existent components in the nexa

of relations which constitute an instantaneous realm of real existents.

34. The feeling of spontaneity which is one and the same with striving, is a necessary component in the history constituted by the strivings which form the essence of the organism. It is, like other things, inevitable in the actualization of the history which includes it and it produces a belief in the isolation and indeterminateness of the organic events of the individual, acting organism with respect to other events. This indeterminateness, however, is of the same nature as the indeterminateness of the events in that portion of the life of a character in a novel which lies in the unread part of the novel. It is specious. It is the indeterminateness of inadequate cognition. It is called indeterminateness because it is uncognized or indistinctly cognized—and represents not the character of the thing but the nature of the perception through which the thing is manifested. After the first act of Hamlet it may be uncertain to the spectator what Hamlet is going to do—there is no uncertainty in his history as a whole. Or, in other words, the determinateness involved in the history of Hamlet is no less great before the play is seen than after it is seen, but after the witnessing of it, the determinateness is evident. The apparent indeterminateness of the history, in short, is nothing other than the illicit projection of the defectiveness of the subject's cognition into the thing as a character of it. A sense of the necessity of events in any life is obtained by a contemplation of the determinateness—the circumstantial unalterability—which reigns over the past of any partially actualized history or group of histories.

35. Now a group of organic histories i.e. of organisms, is a society. The group, however, is made up of individuals and each individual is a confluence of strivings. A society, therefore, like an individual is a confluence of strivings—more extended, however, and more intricate. The history of any given society, or of society as a whole, is a conflict, resolution and integration of strivings which coalesce into trends and thus determine the historical direction of the whole. The process advances with uninterrupted continuity. The trends proceed along orbits which represent the balancing and summation of the strivings.

Though individual strivings are discordant or digressive, though here and there, in one age or another, the voice of tolerance, or of suffering, or of intelligence, cries out a protest, the whole moves on with irresistible momentum. Changes come when changes are ready to come. Things premature, regardless of their merit, vanish in their prematurity. What cannot be ingested by the mutating universe of strivings which is social history, is ejected from it and finds no place in the causal nexus through which it exists. Men do not know what changes their immediate strivings are producing; they know and are interested only in the immediate actualization of those strivings.

36. We shall at this point make a short and not irrelevant excursus into the psychology of physics. We have seen that the physical world is an imaginary construct based on the data of actuality or at least a selection of them. It is questionable, however, how far particulars can be imagined without an anthropomorphic content since the products of the imagination are drawn from the facts and analogies of human experience. How subtly this anthropomorphic character insinuates itself into human conceptions is generally not realized. We have grounds, therefore, to look for such an element in physical concepts and, in particular, that of force.

37. In actual data one thing follows another in succession. It is this succession that is observed. In order, however, to erect a physical system with this observation of succession as a basis, the concept of force was evoked. Indeed, before the doctrine of inertia was promulgated and the physics of the *vis impressa* prevailed, every motion was interpreted as the result of a special and active force. The constant presence of the phenomenon of friction and the habitual perception of things moving only under some propulsion rendered quite artificial and unconvincing the concept of free motion by inertia. A distinction had not yet been clearly made between what was actually observed, namely, plain motion, and what was interpolated by imagination, namely, expression of energy, impressed force.

38. From what source, however, did this notion of force come? It did not come from the things themselves since all that objective observation yields is a succession of contiguities. We see things in motion; we see them change their positions; we see them combine and separate; we never, however, see force. In moving pictures we see objects change their relative positions, collide, separate and engage in violent actions. We do not, except perhaps in moment of self-oblivion, attribute force to their motions since we are not in the habit of supposing force to exist in objects on a plane. Were the pictures, however, to be made solid and presented in the form of a drama in three dimensions the presumption of force would be irresistible.

39. Now the source of this notion, for which we previously asked, is not far to seek. It lies in the awareness of striving which constitutes the actual existence of the organism. The translation of striving or effort into the physical world as force was accepted as self-evident and as too obvious even to be questioned since striving is the essence of the organism—the thing most familiar to it. Speaking plainly, the pushes and pulls which make up the interacting forces of external objects are nothing other than the projections of body-feeling into the relations of the physical world. The strivings which make up these feelings quantified and rendered measurable and applied to physical objects constitute psychological elements translated objectively into physical forces. Thus the physical world, as an imaginative construct, is made to be (although somewhat unwittingly on the part of the imagining organisms) like the organism itself—but on a cosmic scale—a vast confluence of strivings. It is as valid to say that the earth is attracted to the sun by a striving which varies in inverse proportion to the square of the distance, as it is to say that it is attracted by a force which varies in inverse proportion, etc. The elimination of anthropomorphism in physics, at least in Newtonian physics, is a myth.

40. Let us return, however, to our original subject, namely, the psycho-physical problem and consider its validity as a problem. It arose from the conception of the perceiving organism as a federation of mutually exclusive substances, namely, body and

mind; and with this dichotomy as a basis endeavored to account for the phenomena of perception, feeling and will. It is unnecessary to point out that the problem, resting on this basis, has never been solved, although a number of solutions have been proposed for it. Of these, four are commonly recognized, namely, interactionism, parallelism, epiphenomenalism, and occasionalism. Since, however, the defects of the latter couple are too well known to require exposition we shall confine our attention to the first two.

41. Interactionism postulates a reciprocal modification of the two substances, i.e. body and mind, the one by the other, e.g. brain innervation from the sense organs is affirmed to produce perceptions in the mind. A difficulty, however, arises at once which has never received an honest solution. It consists in a dilemma. On the one hand the two substances constituting the subject are postulated as absolutely different and following different laws. If this assumption is not made, then either the mind is a modified form of the same substance which constitutes the body or the body a modified form of the same substance that constitutes the mind and the dualism, together with the theory itself, vanishes. On the other hand substances which are absolutely different can no more interact than you can hit the square root of two with a club. They are, however, in this theory postulated to interact. But if they are postulated to be sufficiently alike to interact they fall under the same genus of things, and their difference relations are merely those of degree and not of kind. This, however, removes their character as separate substances. The consequence is that either the substances do not interact and are separate and discrete or they are subject to interaction and are not substantially different. Many ingenious devices have been invented to resolve this difficulty, from the pineal gland theory of Descartes to the theories of special brain energy of recent times. There is, however, a very excellent reason why none of them have succeeded, namely, that the problem is so formulated that, at the outset, it involves a contradiction in its postulates and implies another in any solution which is proposed for it. The difficulty, however, led to the concurrent theory of parallelism.

42. According to this view the mind and the body do not

interact but the modifications of the one are held to correspond by a one to one relation with the modifications of the other, such that the two, although causally independent, preserve a respective correlation of internal changes. Thus the physical body is in a physical world and the mind and its perceptions—one of which is that of the body—is in a mental world. The two worlds, however, have nothing in common but their parallel modifications.

43. Now there are many objections to this view but there are three in particular which have received no adequate answer. In the first place the assumption of a physical world is gratuitous. The mind is contained within itself and can in no sense perceive the physical world of the physical body. The physical world is unnecessary. Secondly, if the physical world is hypostasized there is no means of demonstrating its existence since the mind only knows and contains its own perceptions. The physical world is unverifiable. Thirdly, for the same reason it cannot demonstrate any parallelism between its own modifications and those of the hypostasized physical world. Parallelism is unverifiable. It is true, that overlooking these objections (which go nevertheless to the central point of the theory) a rather beautifully arranged scheme of synchronously operating monads can be developed. But the objections are only resolved by a somewhat dubious appeal to a discarded theology. As long, however, as they remain unresolved the external physical world is an unnecessary and undemonstrable adjunct serving primarily as an epistemological convenience and nothing else.

44. Now the defects in the above theories lie primarily in the problem rather than the solutions. If the problem is formulated in such a way that it cannot be solved it is little wonder that no solution is found for it. A problem, however, which requires the maintenance of contradictory premises is such a problem. In particular, if the perceiving subject is postulated as a combination of discrete substances, any solution which admits of significant relations between these substances is *ex hypothesi* excluded. The affirmation of such solutions merely amounts to an assertion in the conclusion of what is denied in the premises, namely, that they are not discrete and separate substances.

45. There are, however, significant reasons why the psycho-physical problem was agitated. One of these consists in the nature of a physical object as proposed by the science of physics. Let us consider this relation between the psycho-physical problem and the science of physics.

46. The body it is recalled was held to be a physical object and a physical object was defined in terms of mass, force and matter. It was frequently postulated to exist in space as in an empty container. The standard picture of a physical object was that given in the mechanics of Newton (or previously in that of Descartes). With such a conception, however, no place was open for psychological phenomena. Hence such phenomena were placed in an altogether different substance, called the mind, and from that moment the psycho-physical problem arose. It arose in the endeavor to give a non-contradictory explanation of the relations between two substances which were originally defined as unrelatable. A solution to such a problem, as we have seen, is not to be expected. The dialectic to which it gave rise, however, shows that the confrontation between psychology and physics represents a shortcoming in the thinking of men and that a physics which proposes to be general science derived from actual data cannot ignore those factors in the data which are psychological in character e.g. the existence of feeling. This means that whatever kind of physical world the science of physics constructs it cannot legitimately construct a world in which these factors are unintelligible i.e. a world in which an unresolvable psycho-physical problem can arise. The exigencies of this problem produce the necessity for a rapprochement between physics and psychology. The nature of this rapprochement has been suggested in the physics which envisages the existential object as a series of events—the physical world of existence as a nexus of histories.

PURPOSE

1. Since purpose is an ontological category it might have been treated at any point subsequent to the study of relation. It is, however, especially evident in biological phenomena and hence we shall consider the present exposition of it as continuous with the investigation of the biological problems previously discussed.

2. In an analysis of purpose we shall follow the method of the mathematicians who seek for simple rather than elaborate definitions. Instances of purpose are so common in ordinary life that it is somewhat astonishing that the word has acquired considerable ambiguity. That it has, however, is evident from the various and often antithetic ways in which it is treated. This ambiguity has led to some of the sterile problems and methodological prejudices which have arisen concerning it and it will be our object to give an account of purpose which renders it, on the one hand, ontologically intelligible, and on the other, scientifically acceptable.

3. We shall consider the category of purpose first in the realm of existence and secondly in the realm of being. With respect to the former we shall ask: what is the distinction between cause and purpose? What is the nature of purpose? What is the status of purpose in an existential world? What are the kinds of purpose in the physical world? With respect to the latter we shall ask: what is the meaning of purpose in a rational order, or, in other words, what is the relation between purpose and intelligibility? Let us begin with the former.

4. By cause we mean the linkage of events in an existential world. The logical grounds of this linkage we have previously discussed (Essay on Causation, par. 6). It follows from these grounds that every existential world is causal and that there is no "more or less" in causation. By this we mean that there are no event systems which are more or less causal than other event systems since an event, whatever its particular nature, is enveloped

in a system of implications which comprehends within it its causal prerequisites. An event may, indeed, have a number of causes. The number may differ from that of other events. But the event is, irrespective of the differential number of causes to which it pertains, determined equally with other events—determined in such a way that it fills precisely the position which it does and no other in its existential order. The efficacy of causation is not subject to quantitative variation.

5. Causal orders, however, are of diverse kinds. They differ according to the likeness and difference of the events which compose them. Where these events are qualitatively identical i.e. differ in number or position only, the differentiation of histories is minimized and the system is merely repetitive. Here we have maximum uniformity and maximum indifference of one event with respect to another. Where, on the other hand, the difference relations between causal series, in any domain of existence, are sufficiently great to become disjunctive, the series are respectively isolated and all intersection or interpenetration is precluded. While in this case we have an extreme heterogeneity we also have an absence of all interconnection and as in the case of an undifferentiated world, a maximum of indifference of event to event in different series. Whereas one realm is repetitive the other is disjunctive and in neither is there a basis for any advanced interrelation of constituents. Now that there are in existence such homogeneous or such disjunctive realms may well be questioned. It is possible that the latter, at least, cannot be conceived since we have seen (Essay on Difference, par. 111) there is between any differences a continuity of difference. Our concern, however, in presenting the foregoing dichotomy is not the demonstration or disproof of such realms but the exposition of the truth that the compresence of likeness and difference is intimately connected with the existence of purpose. In what this connection consists let us turn to consider.

6. In those realms where difference is present but not disjunctive, gradation, articulation and coördinative interrelation are possible. The constituent elements of such realms fit into one another in a way conducive to the production and maintenance of coördinated wholes. Now by purpose, in its most general and

unspecialized sense, we mean the interfitting of the constituent parts of any realm of being into a coördinated whole. The ontological meaning of purpose, in other words, is organic coördination. We have, however, to apply this definition to items in the two realms previously indicated, namely, the realm of being and the realm of existence. In order to do this we shall examine the concept of entelechy.

7. By an entelechy we mean a coördinated whole arising from the synthesis of differentiated but correlative elements. An entelechy in the realm of being is a coördinated complex of universals defining a definite form. This we shall call an ontological entelechy. By the concretion of an entelechy we mean the incorporation of a universal form in an existent thing such that the existent thing is an instance of that form. By an entelechy in existence we mean the concretion of an ontological entelechy. Now by purpose in being we mean the coördination of universals by implicative interrelation into an entelechy e.g. a given system of geometrical relations i.e. in their universal aspects. By purpose in existence we mean the coördination of causal series such that they converge to the concretion of an entelechy e.g. the incorporation of the above mentioned entelechy of geometrical relations into an edifice, such as an Egyptian pyramid.

8. Since in every realm of being there is some coördination of constituent elements arising from the similarity and dissimilarity in which they are involved, there is no realm of being which is devoid of purpose. But purpose is subject to degrees. It can be, relative to any instance taken as a point of reference, more or less present. Coördination, however, depends upon differentiation. Purpose, therefore, can be present in greatest degree in any ontological realm where the relation between likeness and difference is at the same time most varied and most subtle. Where they are both present in greatest degrees purposiveness is complete. There arises in this way the most thorough fusion of order and variegation i.e. coördination, and this is the essence of purpose. Applied to a causal world this means that the causal series related within it can be most intricately reticulated to issue in the concretion of a scalar order of entelechies.

9. This concomitance of purpose and causation, however, leads to a lack of recognition of the distinguishing characteristics of the two. Purpose and causation are different. Causation is the non-temporal linkage of events, irrespective of their coexistent order, in the realm of real existents. Purpose is the coördination of event-series generating an entelechy. Causation is unexceptional and ubiquitous. Purpose is a function of assimilated differentiations. It is present in greater and less degrees. The difference may be rendered clear by an illustration. If we compare a collection of pellets tossed together in a hat with a living organism we have causation in both cases but purpose in the latter and, for all significant considerations, its absence in the former.

10. That these two relations, namely, purpose and causation, are different can be demonstrated if it can be shown that the one possesses characteristics which are absent in the other. There are, however, three characteristics which pertain to the one which do not pertain to the other. First, causation is not subject to degrees; purpose is. Causation is quantitatively homogeneous. Particulars are equally caused irrespective of the causal systems in which they exist. Purpose, on the other hand, is present in greater or less degrees and may pass from a minimum to a maximum. There are systems which are barely purposive and there are systems which are highly purposive and systems with intermediate degrees of purposiveness. Thus as we study the evolutionary history of an organ e.g. the heart, and consider its development from a mere muscular tube to a single chambered organ, thence to a double chambered organ and from thence to the four chambered, multivalvular heart of the human, we see the variation of degrees of purposiveness with the degrees of coördinative integration of the differences involved, and the complication of causation in that organ. Such gradational variation, however, is not a characteristic of causation *per se*. The efficacy of causation is uniform for all particulars—complex or simple, they are equally caused.

11. Secondly, causation is not necessarily progressive; purpose is. Causation may be merely repetitive like the turning of a water wheel which does not grind anything. Purpose on the

other hand is the concretion of an entelechy and this means that the process of concretion may go through a series of stages progressively ordered to issue in the incorporation of a resultant whole.

12. Thirdly, causation is a category applicable within the realm of existence only i.e it is a relation of particulars. Purpose, however, namely, the coördination of differentiated parts into an organic whole is a category which pervades the whole realm of being. Owing to this fact a causal series may be an infinite unlimited series since there is an unlimited number of particulars through which it may pass. A purposive series on the other hand while it may embrace progressively wider entelechies has, as we shall see, a limit. For these several reasons then it is obvious that a clear distinction must be made between cause and purpose, but it is also obvious that the two are closely related and we may, therefore, go on to consider what the nature of this relation is.

13. Purpose and causation are complementary. We are, of course, talking, at this moment, about purpose in the realm of existence. Where there is no causation there is no purpose, for it is only by the coördination, i.e. the confluence of causal series that the concretion of an entelechy is possible. The series of inter-accommodated causes which lead from an egg to a chick and from a chick to an adult, are indispensable for the realization of the process at any stage. Indeed it is by the coördination of these causes that the result is realized. Purpose and causation are, rather than being mutually exclusive, interdependent. In a purposive process causation is the instrument of purpose. This, however, shows that purpose is dependent on cause. But cause, in any purposive order, is also dependent on purpose. In a world of assimilated differentiations causes differ and causal relations differ. But they must be coördinated otherwise causes would be severed from their effects and hence cease to be causes. In other words, in such a world, the coördination of differentiated causal series is an indispensable condition for the existence of those series. It follows that causation in a world of particulars existing in assimilated differentiation is dependent upon the purposiveness of that world and, moreover, that every causal world con-

stituted of such differentiated particulars is *eo ipso* a purposive world. But since compatible difference is a relation pertaining to the particulars in any existential world it follows that every existential world is to some degree purposive. The causal series in such a world not only converge to a purposive result but can only exist as a causal series provided they do so. Purpose, in short, and causation are complementary.

14. We have now seen that no realm of being is devoid of purpose; that purpose is subject to degree; that the degree of purpose in an existential world varies with the differentiation of the constituent particulars of that causal world; that purpose and causation are distinct; that purpose and causation are complementary. Let us proceed to a consideration of these general propositions about purpose as they apply specifically in the three levels of existence, namely, real existents, actuality and the physical world. In the present study we shall devote most attention to the existence of purpose in the last. We shall begin, however, with an examination of purpose in the world of real existents. With respect to this realm we have to ask: what is the status of purpose within it; what is the relation of purpose to time; what is the meaning of purpose in the mathematical syntax of causally related histories which constitute the realm which we are considering?

15. We have seen that the realm of real existents is an infinite series of causal worlds each of which is constituted by a non-temporal nexus of histories. The causal relations of the events which make up the particulars of a given world follow from the essential nature of those events. They are hence timeless and existent independently of their manifestation in awareness. Now in every existential world the relations of likeness and difference pertaining to constituent particulars are present in greater or less degree of complication. But, as we have seen, a causal order involving differentiated constituents is dependent for its existence as a causal order on the coördination of the causal series which embrace those constituents and such coördination involves the coöperation of causes in the concretion of

an end result which is called an entelechy. The concretion of an entelechy in an existential world, however, is purpose. Now purpose and causation are, as we have seen, complementary. But causation is non-temporal. Hence purpose is non-temporal. By this we mean that the colligation of histories in an existential world is purposive irrespective of the manifestation of those histories in a space-time actuality.

16. This point is essential, for it renders irrelevant questions about the existence of purposes as future causes i.e. as causes which are somehow operative before they are assumed to exist. It is little wonder, if purpose is interpreted to involve such anomalies as so-called "future causes" that it receives no assent. A cause which in no sense exists cannot be operative. But, as we have seen, both purposiveness and causation are non-temporal. The concatenation of histories in the realm of real existents is instantaneous and not subject to the categories of before and after which derive meaning from the appearance of real existents in actuality. Hence no particulars in this realm are more present or absent than any others and the entelechies which are realized *are* in the same sense that a number is present in the number series i.e. independently of time. The coördination of causal series towards the concretion of an entelechy is thus, like a logical implication, not a temporal but a timeless relation. An entelechy is not a future cause, nor a temporal cause at all, but a concomitant element in the relation of compresence which pertains to the whole realm of real existents. This, however, indicates a significant property of causation in an existential world, namely, that such causation is directed.

17. Now by a directed cause we mean an event which is efficacious in a particular way as a cause because of the existence of an entelechy, towards the concretion of which it contributes. Such a cause is directed towards the realization of the entelechy. Since, however, the concretion of an entelechy is a non-temporal process and since purposiveness is present in greater or less degrees in every causal world the causation in any existential world is, to a corresponding degree, directed. A world of directed causation is a world of realized entelechies and conversely. In the actualization of such a world the direction of causation is equiva-

lent to an added dimension of an essentially non-spatial and non-temporal nature. It may properly be called a purpose-vector. Hence the description of any causal domain which ignores the existence of entelechies, as here defined, and the facts of purposiveness, remains perpetually inadequate. Those facts cannot be debated away into non-purposive categories. Causation in a differentiated world is directed and the direction of causation is the dimension of purposiveness in that world.

18. But the character of purpose as the direction of causation in the realm of real existents has a further significance. We have seen that a number is not an instance of notation but the existential system of relations represented by that notation. Any system of existential relations organically conjoined is a number. But entelechies are such systems of relations and hence entelechies are numbers. Entelechies, however, are the controlling factors determining the direction of causation and hence are the unifying centers which introduce order into the realm of existence. The mathematical integration of the realm of real existents is the purposiveness of that realm. Every existential world is a coördinated nexus of functional relations and as such it involves the mathematical liaison of an ascending series of purposes. The mathematical structure and the purposiveness, in other words, of real existents, are one and the same.

19. Now owing to the fact that purposiveness is a property of real existents the cognition of it is, like that of other such properties, a matter of discovery. It is, like causation, manifested in awareness i.e. in a space-time order, through the actualization of a causal world of real existents. The awareness of the coördination of causal series which effects or brings about the concretion of an entelechy is the awareness of purpose and this is everywhere present from the perception of the growth of a blade of grass to the understanding of the organization of human society. Purposiveness, however, is intricate and not always readily perceptible. It may be obvious or concealed and hence it is a difficult matter to say what the purposive meaning of any causal situation is. Purpose is obvious when the coördinative relations joining a number of events is evident; it is concealed when it is present but not evident. But since the awareness

relation is limited in scope and since any perceiver no matter how erudite can only become aware of an insignificant fraction of the infinity of causal relations which are comprehended in a local world, it follows that all but a small portion of the purposive relations in a causal world are concealed. The purposive meaning of much that surrounds us is as little known to us as the purposive meaning of coal or petroleum was to the American Indians. Or, one may say the same thing in a different way. The full purposiveness of the events of a man's life become evident to him, if ever, only after he has reached a relatively advanced age, since it is only then that he can see the real entelechy evolved from the relations of his antecedent desires and strivings with the social and physical environment in which his history lay. Where purposiveness, however, is concealed there arises frequently the tendency to deny its existence and hence it is a common occurrence that valuable things are despised because men cannot see their purposive meaning. Where the purposive coördination of things is ignored they are supposed to have none. This, however, for the present discussion, is beside the point. The point is that the awareness of purposiveness in the actual world is fragmentary and incomplete. It is subject to the conditions of space and time and hence purposiveness in a space-time world can never be seen in the vast intricacy of its ramifications and can only be seen partially as a system of relations unfolding in time. But the endeavor to extend the scope of cognition beyond the immediate flux of actuality gives rise to the imaginative construction of a physical world. We may turn, then, to a consideration of the purposiveness in that world.

20. There are as many different kinds of purposiveness in any existential domain as there are kinds of constituents which are the results of the coördination of causal series in that domain. In the physical world, however, we distinguish three general and fundamental kinds of causal coördination, which may, according to the nexa of differences which they comprehend, be divided into subordinate species. We shall, however, confine our discussion to the three fundamental kinds of purposiveness, which

are, namely, mechanical, biological and psychological. The first may be called the concretion of an entelechy by addition: namely, by the addition of masses through the operation of external forces—a process involving physical change. The second may be called the concretion of an entelechy by exfoliation: namely, the exfoliation of differential functioning parts into a mature organism—a process involving reproduction and growth. The third may be called the concretion of an entelechy through the causal agency of directed desire: namely, the realization of an existential situation partly or wholly by the causal action of an organic system working through design. This species of purposiveness involves accomplishment. These types of purposiveness are, when all are present, inter-existent. Their separation is gradual rather than discontinuous. They are, however, distinguishable and having indicated them let us turn to a consideration of the first, namely, mechanical purposiveness.

21. Mechanical purposiveness exists in infinite variation in the physical world. It advances, however, from simpler to progressively more complex systems of coördination which increase in complication in proportion as physical objects are built up on one another. Simple mechanical purpose is instanced by the lever. The correlations between fulcrum and pivot on the one hand, and force, power and work on the other, form a coördinate whole expressible in mathematical formula as a complex of functions. The coördination of this whole is one thing and the causal relation within it another. An existential world is conceivable in which an element corresponding to the fulcrum might be quite independent of the work done and power generated; in other words a world involving causation but not purposiveness of the same nature or degree.

22. Complex mechanical purposiveness is illustrated by the niceties of balance and interplay of forces manifest in the solar system. Here the inter-existence of assimilation and differentiation form a coördinated whole of extraordinary beauty. The position of the planets and planetoids relative to one another and to the sun, their orbital motions, their unstable equilibrium

which permits an interlacing of influences making the positions of one calculable from that of the others, their mutual adjustments and accommodation, their rotations involving alternate light and darkness, their revolving satellites, their tides and winds, their inclination to the ecliptic, their axial rotations, their precession of equinoxes and their cycle of seasons are characteristics of an exquisitely purposive order which to contemplate alone is a source of considerable fascination.

23. These coördinations, however, which involve astronomical magnitudes and comprehend not only individual, but systems of island universes, are not the exclusive indications of purposiveness in existence. Similar complementary accommodations of elements are present in geological phenomena. Such for example, are the adjustments arising from isostatic relations, the balancing of ocean and mountain range, the rise and subsidence of continents, elevation and planation, the relations between climate, drainage and topography, selective siftings of material by wind and water, soil formation and distribution, mineral deposition, rock formations and periodic variation in geologic history, climatic zones, wind belts, and ocean currents and countless other similar coördinations. All of these represent the confluence of causal series to produce the entelechies towards which, because they are unalterably determined, they are directed. They lead up to and form the necessary conditions of an environment with which a living thing and hence biological purposiveness is compatible.

24. Biological purposiveness, as we have seen, is the concretion of an entelechy through the internal differentiation and development of the parts of an organic whole. It involves either some or all of the processes of growth, nutrition, maturation, reproduction and response. It appears (1) in the accommodating functioning of parts comprehended in the internal physiology of the organism and (2) in the reciprocal modifications of the organism with regard to its environment. It is thus realized in a vast and intricate complex of coördinated relations

involving the mutual adjustments of the parts within an organism and the external relations of the organism to its own species, to other species, and to the rest of the physical environment. Purposiveness in this realm is ubiquitous and it becomes increasingly more intense with more developed organisms. In the simplest instance, namely, the protozoan, we have the adjustments between nucleus and cytoplasm, the balance between volume and nutrition, the interrelated processes of stimulation through irritability, locomotion, food ingestion, growth, and binary fission—all accompanied by complex coördinations in internal molecular activity. These purposive coördinations are elaborated and developed with greater complexity in more differentiated organisms. There is a constant adjustment between internal functioning and external change and a continuous series of purposive relations passing from the external world into the organism and from the interior of the organism into the external world such that the whole makes a complete nexus of more or less mutually accommodated relations in which progressively more complicated entelechies are realizable and biological individuals, incorporating a series of types, are sustained in a shifting but self-compensating equilibrium.

25. In plants and animals we find an interrelation of organs, e.g. in vascular, nervous, respiratory and glandular interdependence. This is coupled with a system of motor responses, in the form of tropisms, which fit the organism more or less closely into its habitat. There is, thus, an intricate correlation between internal adjustment and external physical demand which evinces in its scope the tracery of a highly coördinated purposive nexus. Thus we have in plants photosynthesis, conservation of starch which is convertible, at need, into sugar, responses to light, gravity and moisture in the form of photo-tropisms, geotropisms and hydro-tropisms; thus we have a complex of phenomena such as the digestive enzymes on the end of a growing root, the tendril on the ivy which on stimulation winds about an object, draws the vine towards it, stiffens, and forms an intermediate spiral which serves as a spring. In animals we have such phenomena as photo-tropism in butterflies, elaborated coördination in structure and function of ants. We may cite the case of

the Australian ant *Odontomachus vastatus*.^{*} In this ant there is a remarkable coördination between the size and shape of the head, which contains the extensor and reflexor muscles for the long mandibles which it possesses. The ant approaches its prey probably in response to olfactory stimuli. When the hairs on the mandible touch the object they set off a trigger response by innervation of the encephalic muscles which immediately contract bringing the mandibles together with an emphatic click and in this manner the prey is dismembered and overpowered. It is interesting to note that in the formation of the ant the size and shape of the head corresponds to the large muscles necessary to operate the mandibles. Such coördination, however, is everywhere present in animal life. Consider the suckers on the feet of the lizard which make it possible to cling to a vertical wall, the juice in the mouth of a leech which prevents the coagulation of the blood which it imbibes, the eye on the extremity of the antenna of a snail, the retractile flagella of the nematocyst of a hydra, the electric organ of the catfish, *torpedo electricus*, the adaptive coloring in the skin of the flatfish, the bill and tongue of the woodpecker nicely adapted to extract insects out of the bark of a tree. Many such purposive coördinations are remarkably developed in the relations of symbioticism, commensalism, and parasitism. Consider the anemone crab which carries a sea anemone on its back. As it moves about it furnishes a change of environment and hence a food supply for the anemone which in turn fulfills the office of a shell. These and an endless number of similar phenomena are all causal elements integrated into coördinated systems of purposive relations.

26. Now we have seen that an organism in the realm of real existents is a texture of events i.e. a history. This point is fundamental with respect to the character of purposiveness in biological phenomena. In the foregoing examples of such purposiveness different kinds of organic adjustment were indicated. There is, however, in each, an instance of the relation of structure and function, organ and its activity. Owing to the ubiquity of this relation in biological phenomena the proper description of it is

^{*} Cf. W. M. Wheeler, "The Physiognomy of Insects," *The Quarterly Review of Biology*, March, 1927, p. 21.

a fundamental problem of biological exposition. The problem has given rise to an abundance of discussion because the two items, namely, structure and function considered as separate and independent items offer insoluble difficulties when they are compounded, as it were, and related externally. Does structure determine function or function structure? Does an animal have hair in order to keep warm or does it keep warm because it has hair—and so on for the other organs of the body.

27. This problem, however, appears in an entirely different light when the organism is considered as a history or event-series. There ceases then to be any disjunction between structure and function. They are identical. An organ is a series of events but the series of events is one and the same with the functioning of the organ. Structure and function taken separately are constructs imagined into a body in a substantialized physical world. But the event-series which constitutes the functioning of an organ is nothing other than the history which constitutes the organ. Hence we do not have, strictly speaking, a heart that beats but rather we have a history constituted of heart-beats which is part of an enveloping history which is the individual. There is, therefore, no justification in raising the question of whether function is prior to structure and determines it or whether structure goes before and induces function. Since the two are identical they are logically and temporarily compresent. The manifestation of an event-series in actuality is the manifestation of a functional history.

28. Purposiveness, moreover, is coördination and purposiveness in existence is the interrelation of events such that concrete instances of entelechies are sustained. Organisms, however, are functional histories. Purposiveness, therefore, in biological phenomena is the coördination of functional histories among themselves—their connection with concomitant histories in a local causal world. The interfitting of these histories is a pre-condition of their existence and thus it is that the world of existence is manifested as a world in which events may have a prospective reference and in which ends are attained by antecedent events. It is a world in which non-temporal development in real existents is actualized in space-time as containing a community of growing

things which are subject to development, maturity and decline. Whatever affects the organism, to some degree promotes or retards it in the attainment of the full expression of its powers. Its internal variations are functions of external change. Hence the biological world is a world of helps and hindrances wrought in a causal system which permits a variation of degrees in the realization of an entelechy within it. It is only, as a matter of fact, in a world of entelechies that helps and hindrances can have any meaning, for all that, and only that, is a help which promotes the realization of an entelechy in an individual history, and all that, and only that, is a hindrance which counteracts that realization. Hindrances are simply discoordinations or lack of purposiveness. However, it is not valid to conclude that individual or even group hindrances are indicative of lack of purposiveness when a wider field of biological development is considered. The struggle for existence and natural selection indicate an intricate nexus of purposiveness in which the hindrances of some particulars contribute to the concretion of other and sometimes more differentiated entelechies. Except within certain rather narrow limits it is extremely difficult to discern exactly what is a help and what is hindrance with respect to the welfare and development of biological organisms. The endeavor, however, to discern these processes and to employ the former leads to the subject of psychological purposiveness.

29. It shall not be our object, although it is not infrequently attempted, to set up psychological purposiveness as a mystery. We propose rather to treat it in precisely the same way that we have treated other species of purposiveness and to describe it in the simplest possible terms. Psychological purposiveness has been the subject of a quantity of lucubration and is not seldom considered as residing in the dark and inaccessible regions of human investigation. It is the opinion of the writer that the obscurity and confusion about the subject does not inhere in the nature of the subject itself. There is, however, a reason for the presence of such obscurity, namely, the absence of a clear metaphysics of purpose. The lack of an adequate metaphysical con-

ception of any subject precludes the possibility of turning upon it the luminosity of logical analysis. The latter presents the essence of the subject at hand in its most universal signification and furnishes a foundation of precise terms by means of which further investigation can advance. Without such knowledge concepts are shifting and vague and propositions are not only diffusive and indeterminate but any one of a number of interpretations may be attached to them. It is not our object here, however, to render an exposition of the necessity of metaphysical clarity for the cognition of subordinate categories. It is, rather (1) to indicate that psychological purposiveness is not the whole, but a species, of purposiveness and (2) to indicate the characteristics which distinguish it from other species of purposiveness. In attaining this end we shall begin with examples and proceed to definitions. It is to be remembered that every instance of a universal lacks nothing in its essence which is in the universal i.e. every instance of a universal completely embodies the universal, and in particular, every instance of psychological purposiveness completely embodies the nature of purposiveness. This being so, it is best, for the sake of clarity, to go to the simplest instances. Let us begin with some comparative examples.

30. The coördinations involved in such types of behavior as the beating of the heart, the peristaltic motions of the stomach, the secretions of the glands are primarily instances of biological purposiveness. Such types of action, however, as a man's winding his watch, or solving a mathematical problem or setting up an experiment are instances of psychological purposiveness. In the distinction between the type of purposiveness in the heart-beat and that in the winding of the watch lies the essential difference between biological and psychological purposiveness. Wherein this distinction consists we shall proceed to examine. First, however, let us consider certain definitions.

31. By the term psychological as applied to events we refer to all events which are constituted by or include within themselves, elements either of perception or feeling or both. In the present instance we are especially concerned with feeling and with that species of feeling which is emotion and, in particular, desire.

Desires are events in the causal series which constitute an organism. As events in such a series they are themselves causes. Causation, however, is directed and desires as causes are directed. The result of a causal series involving a desire as an element we shall call the causal object or result of the desire. Desires, however, are directed in another way: they are psychologically directed toward the objects of their satisfaction. We shall not here bring up the question concerning the existence of diffused and unorientated desires. That there are such is a matter of little doubt. Our concern here, however, shall be with desires which are directed psychologically towards their respective objects. Now the psychological object of a desire we shall call the conative object of the desire. It is evident that the causal object and the conative object of a desire may differ. When a boy stretches for an apple, falls out of a tree and breaks his arm, the breaking of the arm is the causal object of the desire, the apple or rather the possession of the apple, the conative object. Now by a psychological purpose we mean an event which, owing to its correlation with a desire directed towards it, is causally coördinated with the events of a history. A psychological purpose, in other words, is a conative object which, as such, has a causal effect in the determination of an event series. An event or situation which acts as a conative cause of its own incorporation in a history, by the evocation of desire, is an accomplished purpose. An accomplished purpose is the coincidence of the conative object with the causal result of a desire. It is the coincidence of a conative with a causal object. An unaccomplished or frustrated purpose is the divergence or non-coincidence of causal result and conative object. E.g. in the case of the boy stretching for the apple: if he had attained it there would have been a coincidence of conative object and causal result. Since, however, he falls from the tree and breaks his arm the latter event is the causal object and it is quite different from the conative object whose influence, nevertheless, was contained in the causal series which led to the fall. In an accomplished purpose the event which constitutes the purpose has a noteworthy property. It enters the history both as a conative object and as a causal result. It is thus an element in the causal series which leads to itself. The dual status of

events as participant both in a causal sequence and in its result is a property peculiar to psychological purpose. This, however, unless it is discerned that event-series are essentially non-temporal, evokes again the unsolvable, because gratuitous, enigma of the future affecting the present. As real existents, the event-series are not subject to the categories of past, present or future. These pertain to actuality only. And where such is the case questions positing a relation between these temporal categories are contradictory and hence meaningless. Psychological purposiveness in a world of real existents does not rest on any supposition of future, i.e. in the ordinary sense, non-existent causes.

32. We may now return to the comparative example which we previously cited, namely, the example contrasting the purposiveness of the functioning of the heart with that of the winding of a watch. The beating of the heart is, generally speaking, independent of desire. It is no doubt possible that one desires his heart to beat but, for the most part, the heart goes on beating whether he desires it or not. The behavior involved in the beating of the heart (although that process may be the conative object of a desire) is not causally affected by its relation to desire. When a man, however, winds up his watch, solves a mathematical problem, sets up an experiment, the process involves a conative object which causally affects the event-series which involve those processes. In the first case he desires to tell time, in the second to attain the solution of the problem and in the third to test a hypothesis or to get data on the subject-matter of his experiment. Here the behavior is correlated with desire as a cause and the desire is correlated with the conative object which is, for it, an end. In the case of the beating of the heart the behavior is relatively independent of the conative object, whereas in the cases of psychological purposiveness the latter is decisively effective. Behavior, hence, which is psychologically purposive is behavior which involves a conative object as a causal factor.

33. Now psychological purposes are seldom immediately accomplished. They are for the most part the result of an intermediate event-series which leads to them. The causes in such a series, however, are themselves purposes i.e. conative objects,

subordinate to the primary purpose. Such a series of directed purposes we shall call a purposive series. E.g. a man winds his watch not for the sake of winding his watch but as an intermediate step to telling time. The intermediate events, therefore, which lead to the accomplishment of a purpose may, in some cases, be arranged by the organism to realize the desired result. When such arrangement involves ratiocination or a calculation of effects with a view to the accomplishment of the conative object, the process involves design. Design is the use of intellection for the realization of a purpose. It is the presence of ratiocination in a purposive series. Not all psychological purpose includes design but purposive accomplishment involving the control of mediating events is, for the most part, the result, partially or completely, of design.

34. Psychological purposes, to proceed, are primary or subsidiary, complex or simple, remote or immediate. A primary purpose is a conative object which is not considered as a means to another conative object. A subsidiary object is an object considered as the means to another object. A simple purpose is one in which there is only one conative object. A complex purpose is one in which there is a nexus of conative objects. Immediate purpose is that which involves no intervening events between a desire and its satisfaction. Remote purpose is that, in which, the events which constitute the conative object are causally separated by intervening events from the events which first contain the desire. Both immediacy and remoteness are subject to degrees. Since remote objects require for their existence the existence of intermediate events these events become subsidiary purposes and every remote purpose is also complex i.e. it involves in its existence a number of other conative objects as subsidiary. Now the remoter the purpose the more complex it becomes and the more occasion there is for the employment of design in its accomplishment. Those purposes which are strictly immediate, in fact, preclude design since their causal determinants are given and effective without the opportunity for the mediating process of design. The remoter and more compound a conative object the more place for design in its accomplishment—but the more intricate the design the more complex the conative object. Hence there is

a progressive multiplication of complexity in the psychological purposiveness of organisms capable of design. The attainment of simpler and earlier purposes generates the possibility of the attainment of remoter and more complex purposes. This progressive multiplication of purposive complexity expresses itself in the cumulative development of cultures and of culture traits from simple to complex—for example, in the development of large and differentiated organizations for special purposes and in the extreme specialization applied in industry, etc. As the process continues a greater demand is made on the intelligence of those who direct and manage social, political and economic organizations. The growth in purposive complexity only ceases with a collapse of the system. It is possible, and it happens not infrequently, that the process develops to a point of complication beyond the cognitional grasp and hence beyond the control of the humans involved in it.

35. Purposiveness which contains or requires design differentiates humans from animals since the latter apparently do not possess other than simple and immediate psychological purposes. There is a considerable gap between the act of piling up boxes to get a banana which is apparently as much design as animals are capable of, and the foundation of a banking system to keep credit flexible and currency fluent in times of need.

36. Now by an intention we mean a conative object which involves design in its attainment. By an intentional system we mean a system of items coördinated through design to realize an intention. Examples of an intentional system are: a state, a corporation, an army or a machine. Practically all forms of the organization of humans are intentional systems. With the multiplication of subsidiary purposes in a purposive system, intentional systems contained therein become progressively more complex. Such intentional systems, however, are entelechies and are subject to concretion in an existential world. The progressive multiplication of psychological purposes which produces ever more complicated intentional systems is a fundamental process in the culture of a developing group. All culture is quasi-intentional. Culture, in fact, may be defined as the elaboration of intentional systems during a succession of generations. It is a

developing system within a developing system. It involves a type of growth not present on other purposive levels i.e. it involves a differentiating system of purposive relations dominated by psychological factors as propelling causes which factors are continuous with the biological purposiveness from which they arise. The purposiveness of a culture, even though in its higher and more obvious forms it is psychological and intentional, thus resides fundamentally in an underlying matrix of biological relations. This leads, however, to a consideration of the relation between psychological purposiveness and entelechy.

37. Psychological purposes may accord or discord with the concretion of the entelechy proper to an individual. An example of the accord of psychological purpose and entelechy is found in the desires of hunger and sex, which impulses, operative throughout the scale of animals, produce highly complex intentional systems in human relations. Examples of the discord of psychological purpose with the entelechy of the species are found in deleterious desires such as those evident in alcoholism and the use of drugs. There is a countless variety of promotive and destructive conative objects which operate in the causation of human events and many of the most destructive are attained by elaborate and ingenious designs. In this class may be put most of the trades which are injurious to those employed in them—in fact, much that is connected with the factory system. It is evident, however, that the accord between psychological purpose and entelechial development predominates to a considerable extent over the discord since otherwise the race would rapidly become extinct. Organisms and societies are for the most part self-regulatory and it is only when external factors of an unusual nature arise that an eradicating maladaptation sets in. Nothing is more foreign to nature than the postulate sometimes implied that if certain beliefs such as the immortality of the soul or particular codes of morals were discarded humans would deliver themselves up to a destructive holocaust of abandoned pleasure. Desire itself is self-regulatory. It diminishes and turns into aversion as the point of satiation is reached. If men were left to themselves without beliefs and customs, their fears and needs would propel

them to develop beliefs and customs in some form in order to insure individual and social existence. The danger, if it lies anywhere, is in the overdevelopment of beliefs and customs particularly on irrelevant and unessential points.

38. Delicately balanced nexa of purposive structures are, because of their complexity, subject to a certain instability. They are dependent on the maintenance of advantageous adaptations to external things. This involves an intricate reticulum of causes, the removal or elision of any of which, produces a collapse of the purposive system. In consequence there arises a conflict (of which we shall have more to say at a later time) more or less great between the attainment of values by purposive activity and the existence of the system erected for that end. Simpler purposive structures in the realm of existence have a stability which is the result of their lesser causal dependence. The number of external things on which they depend is relatively smaller. This, however, is not an unqualified advantage. In the field of biology, at least, they lack a flexibility operative under varying conditions which is a compensating character possessed by more complexly organized individuals. Varied behavior comes only in complex systems. For example, the stereotyped behavior in the nest-building habits of birds requires them, in case of partial disturbance of their nests, to return to the beginning and rebuild completely. They cannot obtain the benefit of their past labor by expeditious repairs. Such adaptability and variability of behavior only comes with more differentiated and articulated organisms. But on the other hand, highly purposive systems in which extreme specialization of parts gives rise to variability of behavior become very fragile and unstable since the flexibility of functioning in the whole is purchased at the expense of a restriction of functioning in the specialized parts and any impediment to the operation of these parts paralyzes the whole. Where the parts are ultimately specialized they are not capable of any generality of functioning. Thus in the more immediate levels of purposiveness the very conditions of organization may set up instances of partial discord between the purposiveness of an item and the realization of its entelechy. This discord is, however, as we have indicated, subordinate and inferior to the agreement between these two factors

since were it not, no individuals could attain any definite characters whatsoever.

39. Now owing to the more fundamental concord between psychological purposiveness and the realization of an entelechy, psychological purpose is founded on, and is a continuation of, biological purposiveness. It is embedded in a texture of biological relations. The desires, the intentions, the conative objects of psychological purposiveness are coördinated with a wider field of purposive relations which envelops and determines them. Humans have the intentions and purposes which they do because they are the kind of biological animals which they are and a considerable part of the purposiveness in their behavior and in their emotions they are entirely unaware of. Indeed if it were not for this secondary rôle of psychological purpose it would fare ill with the humans who possess it. If men were left to govern the conditions of their existence by their designs and intentions it is practically certain that they would make a miserable piece of work of it. All the ineptness of which they are capable would be turned into practice in an actual environment, severe and uncompromising, which tolerates no cardinal mistakes.

40. Thus psychological purposiveness, while it is a highly specialized type of purposiveness, and through the phenomenon of intention, involves event coördinations in which native desire is directed by intelligent design making possible the building up of intentional systems which, propelled by the motive force of primary strivings, advance to more and more complex cultural structures, it is not the most universal, the most fundamental nor the highest i.e. the most complex type of purposiveness. Men are inclined to think it is because their knowledge of purposive relations is limited in scope and difficult to attain. The totality of the interrelations and coördinative adaptations of events in an existential world far exceeds the vision of the sharpest eye and is quite beyond the penetration of the man engrossed with immediate ends and proximate affairs. Hence psychological purposes are considered as separate in existence and final in nature. But they are interwoven, as we have seen, with a wider texture of purposes which extend through the biological and physical worlds and into the whole realm of being. Since humans cognize

but a small portion of this purposive nexus they convince themselves that it culminates in their peculiar designs and intentions. But there is an inter-relationship of purposiveness on different levels of being. What is final—or what is posited as final purpose—on one level is subsidiary with respect to another. The organisms in the former move about and behave as if they were the end and object of nature. Their behavior, however, and their existence, in relation to higher and more extensive purposive realms is subsidiary and this also is a character of psychological purpose in humans. It is final in their own world but subsidiary in a comprehending realm of purposiveness which exceeds their cognition. The intense and exalted purposes of men are vastly important to men but they are not the exclusive purposes of nature. They are, in fact, peripheral detail in the comprehensive structure of ontological purposiveness. The final purposes imagined by humans in their daily affairs are only the means to other coördinations and purposes of which they are only inadequately aware. Just as the burro walks around his circle without realizing that he is grinding wheat, or as the hen lays eggs not for the sake of humans but for the satisfaction of her physiological nature, or as the carrier pigeon strives homeward without knowing that he is, at the same time, bearing a message, so the psychological purposes of men which they hold as final in their universe of action are subsidiary in the wider realms of being, in the more comprehensive range of history, and in the higher levels of purposiveness in which they are incorporated.

41. Now purposiveness, we have seen, is the coördination of items which constitute an entelechy. The greater the degree of articulation involved in the coördinated systems the greater the degree of purposiveness. That purposiveness is greatest where the coördination is complete and such occurs in the realm of being. The realm of being is the implication of the independent. It embraces the logically ordered concatenation of universals outside of which nothing is. Entelechies, however, are universals. The infinite pluralities of worlds, moreover, in the realm of existence are not only themselves the concretions of entelechies but they are constituted of subordinate concretions in unlimited

variegation. Thus the purposiveness of the realm of particulars i.e. of the realm of existence, is the reflection and the expression of the purposiveness of the realm of being. It is the purposiveness of the latter carried out in the limitless differentiation of particularized detail. In this order of relations entelechies are comprehended within entelechies in the same way that the meaning of an individual is comprehended within the meaning of the society in which he exists. In the vertical expanse of being from the infinitesimal relata of the relational regressa which constitute particulars to the higher realms of inclusive forms, there is an ascending series of enveloping entelechies which constitutes an infinite but integrated realm of purposiveness. These entelechies represent superimposed levels of purposiveness. All instances of purposiveness are such only in relation to this or that level with respect to which they are considered. Thus what is desultory, or disconnected and non-purposive with respect to an immediate level may be part of a coördinated nexus involved in a higher level. E.g. the destruction of an organism in the struggle for existence is non-purposive for the individual but through the process of natural selection purposive for the species. Or, to draw an example from another field, at one level of mathematics, namely, that of the system of real numbers, the square root of minus one is an uncoördinated and useless concept; at another, namely, in the field of complex numbers and its applications e.g. to the theory of electric currents, it reveals itself to be highly purposive. At one level, in short, it is non-purposive, at a higher level it is purposive. Now the timeless process whereby futility or non-purposiveness on one level arises as purposiveness in a higher level we shall call purposive redintegration. Purposive redintegration is a relation arising from the different teleological bearings of an item with respect to different purposive systems. In order, however, to understand the meaning of purposive redintegration it is necessary to return to a consideration of the relation between purposiveness and causation.

42. Purposiveness and causation, in the realm of existence, are complementary (par. 13). Causation, moreover, is a relation issuing from the logical conditions which govern particulars as instances of universals. Thus all instances of causation are de-

pendent on the systematic relations of universals. Since these relations, however, constitute the implication of the independent, all instances of causation are comprehended in the ontological entelechy which governs that implication as a whole. Now by futility, as we have seen, we mean the discoördination, the absence of purposive relation i.e. the non-presence of any interfitting of events with other events or items in a given teleological level, with respect to that level. All instances of futility are, in this sense, relative. But all such relative futility, by the foregoing propositions, is causally determined. Hence in the ascent of enveloping entelechies all futility on lower levels is absorbed through purposive redintegration, and in the perpetual, or rather the timeless realization of the entelechy constituted by the independent all futility on lower levels is redintegrated. In the economy of being absolutely nothing is futile and nothing is devoid of purposive meaning. Reality is unexceptionally complete. No life or no man or no microscopic organism is, or can be, other than the expression of a purpose which is comprehended in the essence of its nature and involved in the whole implication of being. It is to be remembered, of course, that we mean by purposiveness, ontological coördination—the interfitting of elements in the realm of being such that they comprise wholes which are entelechies.

43. We have seen, to continue, that the extension of difference relations through the realm of being—inclusive of the series of existential worlds—is involved in the logical consecution of items and their relations, issuant from and comprehended in, the implication of the independent. This implication constitutes the rationality of being and the rationality of being and the intelligibility of being are identical. But from the articulation of differences in an infinite order of logical coherence arises an unlimited progression of inter-accommodated differentiations. The inter-accommodation of these differentia, however, is ontological coördination and, as we have seen, ontological coördination is nothing other than purposiveness. Such ontological coördination, however, is one and the same with the implication of the independent. It is the organic system of this implication considered

with regard to the interrelations of the dependent components. But the implication of the independent is the rationality of being. Hence the content of rationality and the content of purposiveness is identical. Purposiveness and rationality are complementary aspects of the same order. They are compresent aspects of the same system of relations and are, to borrow a term from mathematics, inverse functions, the one of the other.

44. Purposiveness, however, is directed. A purposive item fulfills its nature as such in contributing to the being of an entelechy. It is purposive, however, not because it migrates, as it were, from its position and changes into something else. It is purposive because it is precisely what it is and in the direction of its relations it fulfills its own nature and not that of another thing. This may be illustrated concretely. The purposiveness of a magnetic needle is not realized in its actually moving to the pole but in its pointing to the pole—or, in other words, not by having other strivings than it has, but by having precisely those strivings which it does have it realizes its purposive relations. The purposiveness, thus, of things, is not essentially realized in their change, nor in the modification of the directions of their purposive relations, but in their being. The extended purposiveness of things not only promotes but requires their infinite non-temporal differentiations. Purpose does not mean the centripetal collapse of everything into one thing but rather the orientation of things in an entelechial order. There is no resolution of things into undifferentiated similarity in the instantaneous realm of logical relations. But in the ascent of ever more comprehensive entelechies all purposiveness is directed.

45. Its direction, however, is not that of rationality. The direction of rationality is from the independent to the dependent. The direction of purposiveness is from the thing to the entelechy i.e. from the dependent to the independent. Now an entelechy is the object of purposive relations. We have seen, however, that the nexus of rationality i.e. the implication of the independent, is one and the same with the content of purposiveness, and that the origin of this nexus is the source of intelligibility. The object, therefore, of purposiveness—the end to which it is directed—is the source of intelligibility and this

source is the center of a timeless, non-spatial, radial nexus of implicative series whose infinitely differentiated components, orientated towards it through purposive coördination, constitute the entire realm of being.

PART II

Ἡ γὰρ ἐγὼ ἄγω ἐνταῦθα, ὦ γενναῖε, ἢ
ἐκεῖνος, ὃς ἂν φῇ ἀνέδην οὕτω τοὺς χαίροντας,
ὅπως ἂν χαίρωσιν, εὐδαίμονας εἶναι, καὶ μὴ
διορίζηται τῶν ἡδονῶν ὁποῖαι ἀγαθὰ καὶ
κακά; ἀλλ' ἔτι καὶ νῦν λέγε, πότερον φῆς
εἶναι τὸ αὐτὸ ἡδὺ καὶ ἀγαθόν, ἢ εἶναι τι τῶν
ἡδέων, ὃ οὐκ ἔστιν ἀγαθόν; PLATO

THE LOGISTICS OF VALUE

1. The historical dialectic which underlies any developed treatment of a philosophical category is significant in proportion as it has formed the substructure of a succession of views, consecutively ordinated in such a manner that they lead to the most comprehensive, and sometimes the chronologically latest, conception of the subject at hand. The working out of a point of view is an affair of centuries and as its amplification and ramification progresses, its history as an essential factor in its intelligibility, becomes more indispensable. Where, however, this historical dialectic has not been consecutive but rather diversified and has been refracted into many small and deviating channels, the survey of the philosophy on the subject shows a multitude of attempted solutions or syntheses, each starting with an individual thinker and each diverging in its own direction. Such is the case with the theory of value. There are, to be sure, systems of ethical and more or less colligated expositions of esthetic value, but there is little synoptic consideration of the category of which these are special instances. Certain primary distinctions, certain parts of our terminology, go back to the Greeks, but as for one or a few integrated and worked out points of view, they are non-extant. A theory of value has for the most part to start anew. A man can read many books on the nature of value and conclude with little more than a medley of factual knowledge of the private opinions of the authors. He would do better to set himself to the task of thinking the subject out from his own premises. Providing he does this unflinchingly and thoroughly he will have something more significant for himself than the incoördinate mass of diverse opinion pertaining to the subject. In entering the realm of value we enter also the region of prejudice; the distinction between the idiosyncratic and the existential becomes blurred.

2. There are, however, certain principles to which we may

ask a satisfactory theory of value to conform. First it should be consistent, in the sense at least, that it is non-contradictory. As we have elsewhere indicated contradictory language is non-referential. The literature of the value-problem is abundant in apparent language. Secondly, it should be clear as to its method. If empirical it should be completely empirical; not empirical with respect to favored and blind with respect to disagreeable facts. These two principles have been promontories on which many, if not most, of the heavily laden ships of valuational dogma have crashed and discharged onto the fluctuating surface of the sea of apparent language their countless treasures of inspirational phraseology. We have in the Gorgias a clearly presented illustration of a speaker who is first inconsistent and then refuses to accept *the facts* of nature which discord with his feelings. In more or less subtle form, however, the violation of these principles is extant in theories which originate from many great motives of edification or enthusiasm.

Let this suffice for a statement of requisites. In proceeding we shall probably violate both ourselves but shall endeavor not to.

3. Consonant with our customary method we shall proceed towards an adequate and then more and more adequate definition of the subject at hand. In so proceeding we shall find out the logical status to which such a definition is to conform. The determination of this form we have chosen to call the logistics of the subject. Such logistics come expositionally prior to the determination of content. When, therefore, we have indicated such a form we shall turn to the problem of content.

4. Whatever else value is, it is that principle according to which judgments of better and worse are made. Now there are two kinds of better and worse: the one refers to the use of a thing, the other refers to the thing appraised as an end. The valuational element in the former is, strictly speaking, nil, since it refers only to the accomplishment of an end whether that end itself has or has not value. But if the end has no value neither has the means. Hence *better* in this sense is not here introduced. Rather, we refer to that use of *better and worse* which applies to ends. Such *better and worse* is such according to its relation to

a principle which we shall call value. In case there are many principles according to which ends are called better and worse they shall all, nevertheless, have to conform to the conditions which adhere to such a principle.

5. If value, however, is a principle according to which things are better or worse it follows that value itself cannot be something which can be better or worse. For if value itself is better or worse then it is either better or worse according to itself or something else. But if it is better or worse according to itself then it will be the principle according to which the principle according to which items are better or worse, is better or worse, and again it will be the principle according to which that principle is better or worse and so on indefinitely so that there will be no principle either according to which the principle that items can be better or worse, can itself be better or worse, or no principle according to which items can be better or worse—but this contradicts our hypothesis. If, however, it is better or worse according to something else it will both be and not be the principle according to which things are better or worse, which is contradictory. Value, therefore, if it is the principle according to which things are better or worse, is not itself subject to *better or worse*. That which is better or worse is so because it participates more or less in value. But value does not participate in itself because participation is a relation and only that can participate which is, in some sense, other than that in which it participates.

6. It follows that participation in value, in so far as value is the principle according to which things are better or worse, is subject to the category of quantity. Then what we mean by better is more, by worse, less value. That is, A is better than B in that A has more value. As value, further, is quantitative it is subject to number. Thus it is expressible in units, fractions, etc. provided such can be defined. Moreover, one unit of value is homogeneous with any other unit of value; and there are infinite units, i.e. a thing may participate infinitely in value. Furthermore whatever items participate either infinitely or infinitesimally in value, the value in which they participate is equally valuable just as instances of whiteness may differ quantitatively but not qualitatively from other instances of whiteness.

LOGISTIC PREREQUISITES AND THE DEFINITION OF VALUE

1. The definition of a word involves the attribution to it of a specific non-contradictory content. Where the definition, however, is of something which falls into a class higher than itself, it will be, by that fact, determined logically to the extent that it cannot involve characteristics incompatible with that class. Or where it is the definition of something, one or more qualities of which are postulated, it cannot involve characteristics repugnant to those qualities. Such a preliminary examination of the scope of a definition composes the logistics of the subject. These are the form to which we can say any possible definition will have to agree. In the case of value we find that its definition will come under the category of quality, will be subject to quantitative participation, and will be that which is itself not subject to the relations of better and worse.

2. We shall pass over at present the question whether only one or more than one item may be found to conform to these conditions and proceed rather to examine those things which have been presented as constituting value. Of these we shall consider four psychological categories which have been erected into definitions of value, i.e. the desired, interest, pleasure and happiness.

3. The proposition that we call a thing good, i.e. valuable, because we desire it, is subject to three adverse criticisms. First, because we call it good does not imply that it is good. If error in judgments of value is possible—a problem we shall take up subsequently—then we may predicate value of that which has not value and this predication does not necessarily attach value to the thing. But the question here is, in reality, about the proposition: that which we desire participates in value because we desire it. It may be perfectly true that we call a thing good because we desire it, but it is not without further consideration necessarily true that because we call it good it is good. In other

words, we cannot reason: we call good that which we desire; but what we call good is good; therefore what we desire is good. Some further demonstration is necessary to show that what we call good is good. I use the word good here to mean: that which has value. Such a demonstration would come by showing that whatever is good is good because it is desired. This leads to a second deficiency with *the desired* as a definition of value.

4. If what is good is good because it is desired, then the desired cannot be better or worse in so far as it is the desired. That which is desired may be more or less desired and hence be better or worse but things equally desired will neither be better nor worse. In other words, by our conditions of value, if the desired is value then the desired cannot itself be better or worse nor can there be better or worse desires. But (1) things equally desired may yet be better or worse, (2) desires may be better or worse, (3) the not-desired may be valuable, therefore, the desired cannot be value.

5. A third defect, simple but perhaps pertinent, in the proposition under consideration is that we do not, in fact, always call that which we desire good nor do we always desire that which we call good.

6. The conception of value as the desired is closely related to the conception of value as satisfaction, since satisfaction is generally taken to be satisfaction of desire although sometimes it is employed generally to denote any pleasurable state or reaction. But if satisfaction is value then satisfaction cannot be, as satisfaction, differentiated into higher or lower (previous essay, par. 5) because the principle which determines whether that which is better or worse is better or worse cannot itself be better or worse. If satisfactions are higher and lower then they are higher and lower according to some other standard than satisfaction itself. Therefore satisfaction will not be that according to which things are better or worse; therefore satisfaction will not be value.

7. It is to be noted that these exclusions do not imply either that satisfaction or the desired may not participate in value, i.e. may not have value or be valuable. (In fact it might appear

that satisfaction is the only thing that can have value.) But they cannot be identified with value under the conditions asserted.

8. Common sense, which rarely reaches a very great degree of consistency on any subject is less consistent on the subject of value than on anything else. It sometimes, however, sets up as the definition of value the widest psychological category possible, namely, interest. It supports this piece of oddity (in so far as it supports it at all) on the grounds that other psychological categories seem to fail as definitions of value; but sometimes adds as confirming reasons two arguments issuing from linguistic convenience, namely, (1) when interest is equated with value it is possible to talk about the world of interesting things as the world of values, but why, except for purposes of euphony, this transposition of names should be affected is never made quite evident; (2) when value is defined as interest, things aversive, hateful, etc. can be said to have negative values, thus giving one the opportunity of bestowing on them, as it were, an additional opprobrious epithet.

9. But despite the cogency of these reasons we are inclined to believe that it would be a hardy soul who would not agree that interest as interest is subject to better and worse, that there are interests which are higher and lower, and that things of equal interest are subject to variable valuation. We waive the question of the indeterminateness of the term interest itself. If this that we now say is valid, then the definition of value as interest violates the condition of valuational non-variability of the principle of value itself and is therefore not acceptable as the definition of value. Interest and value may be related; they are not identical.

10. Pleasure and happiness as definitions of value are subject to the same deficiencies and unless they are taken as valuationally homogeneous, which they are not, they prove to be items which can participate in value but are not one with value itself.

ON THE DEFINABILITY OF VALUE

1. Of the psychological categories that we have examined we have found that none has been able to satisfy the conditions of a definition of value. All of these categories fall within the province of feeling. It is thought, generally, that whatever value is, it must have some intimate relation to feeling. Such we may find it to have but as yet that relation has not advanced to the point of equality or identity.

2. That feeling and value or some species of feeling and value are not one perhaps cannot be asserted until all of the kinds, grades and nuances of feeling are sufficiently discerned and tested by the criteria of value. But as these kinds, grades and nuances are practically innumerable we cannot be sure that some one of them might not appear to correspond to the pre-requisite conditions we have considered as applying to a definition of value. We can, however, make a survey by selecting for eligibility those which have the greatest probability and such we have done. All that can further be said is that, leaving these, the probability of discovering one among the rest conformable to the postulated conditions progressively decreases. We shall take this diminishing probability as a basis for the proposition that value cannot be defined exclusively in terms of a psychological category and more especially in terms of the category of feeling. The farther the advance in the psychology of the emotions takes us the more they are recognized to be complicated, commixed and issuant from sources uncognized by the feeling subject. And it is extremely doubtful whether any actual and hence complex feeling does not contain elements not, as feeling, distinguishable as subject to the relations of better and worse. The history of the theory of value contains a goodly library of volumes purposing to identify value with feeling or one of its species but it is doubtful whether any of these has fulfilled the conditions originally presented as requisite for a theory of value,

namely, self-consistence and consistency with empirical data recognized as such by the authors themselves. And the reason for these shortcomings lies to a large extent in the neglect of the conditions which any definition of value is to fulfill. Consider either hedonism or so-called eudaemonism or its voluminous modern development, i.e. utilitarianism.

3. It is to be noted, however, that these feeling-theories of value frequently state two propositions which are sufficiently similar to be taken as one but which are incorrectly so taken. They say, namely, (1) that the highest good is some form of feeling (the specific kind varies with various theories) and (2) that this form of feeling is value. Only in the second case do they neglect the principles of adequate definition which we have just now considered. There is a distinction between the terms "value" and "highest instance of value," or "highest-value," for value and that which participates in value are different and the definition of the one is not the definition of the other. It may be said that a definition of the very lowest value (instance of value) has an equal right with the definition of the highest value to be identified with the definition of value, for, in short, neither has any at all. One might as well define animal as either amoeba or man—but neither is applicable. Hence a theory in so far as it is dealing with the conception of a *summum bonum* may have significance which it would not have if it were taken to be dealing with a definition of value *per se*.

4. That which is not definable is that which cannot be expressed in terms other than its denotative term, i.e. its name. Defining is a matter of naming and substituting compound names whose referential content is known for simple names whose referential content is sought. Since, however, we find no other terms which have the referential content applicable to value under the posited conditions of value, the argument points to the tentative conclusion that value is not definable except in terms which presuppose a cognition of value i.e. it is not in truth definable. Until something is discovered which satisfies the aforementioned conditions, value will have to be considered as sufficiently unique to prevent definition in terms better known than itself and particularly in psychological terms such as pleasure,

satisfaction, etc. It is like the color red, or any color, subject to indication but not definition.

5. It must be clearly recognized in this connection that while we put forward the proposition that value is that principle according to which things are better or worse, we do not put it forward as a definition of value but as a condition to which a definition of value must comply. It may be a perfectly true proposition but it is not an acceptable definition. It fails to be the latter because the terms *better* and *worse* presuppose a knowledge of the nature of value and, hence, can never be used in a definition of value if the meaning of the term value is not already known. A definition is invalid if made in terms which presuppose a knowledge of the thing defined. It is likewise didactically of no significance for it conveys no unknown information. Hence the statement that a thing is such and such is not always a definition although such a statement may have significance in stating something about the thing which is taken as its subject.

6. Since value is indefinable it cannot be identified with any other thing, we can say, which we know. But what, it may be asked, of special instances of value? Even in cases of special instances of value there is no clear-cut cognition, e.g. as there is in the case of a color which is also an indefinable. In other words value is a quality of variable knowability even in particular instances and for this reason we shall add to the proposition of the indefinability of value that of the transcendence of value. Value, if it is at all, is transcendent in the sense that it does not lie within the realm of indubitable perception. But the existence, that is, the being of value, cannot be denied unless this denial is accompanied by the denial of any distinction in things of better and worse.

This, however, leads to the problem of the cognition of value.

THE COGNITION OF VALUE

1. The indefinability of value does not imply its non-existence but it accentuates the difficulty attending a description of the cognition of it.

2. Value is distinguished from values as a universal from its particulars. Values are particular instances of value. Particular instances of value include any qualitative characters resulting from participation in value. Whatever participates in the relation of better or worse either participates in or implies value. Any instance of value implies the existence of value as a universal (Essay on the Universal and Its Relations, par. 3, III and IV). Instances of value, however, do not have to be particulars *per se* but may be other universals, e.g. pleasure.

3. When a universal in and by itself is not perceived, the perception of any instance of it is conclusive evidence of its being. For (Essay on the Universal and Its Relations, par. 3, III) the particular is dependent on the universal. If then there is any doubt as to the referential content of a word denoting a universal that doubt can be obviated by providing any single instance of the application of the word. And if there is any doubt as to the ontological significance of the word value such doubt is removable by referring to any instance of value. Regardless of what is or is not considered indispensable or essential to value there are few who deny the existence or being of any instance whatsoever of value. There are few, in other words, who postulate a valueless world.

4. The questions, however, of the existence and of the cognition of value are different. Let us take an example from the study of color. There may be an infinite number of colors outside of the seven perceived by humans. The existence of any one of them would in no sense be retracted by its non-visibility to men. However it would, under the circumstances, remain outside the scope of human cognition. And the question may be raised

whether value is not in a similar class of items. In considering this question we shall make a preliminary analysis of the relation in which value is recognized.

5. We shall call a situation a whole of two or more terms with a relation or set of relations between them. Now we may say that we have a particular instance of value when a situation is given which contains value. The question whether the value is in one of the terms only, or in the relation only, or in the situation as a whole, does not at present concern us. Wherever it is, if it is perceived, it is perceived somewhere in the situation and we may ask what is the character of this perception?

6. If we posit a situation in which a human (or any other sentient thing) is one of the terms we may assume that he will have feelings. Now it is said that the value of the whole situation will be dependent upon these feelings: will go up or down, to speak figuratively, as these feelings go up or down. This is one form of relativism. It is said that the human feels the value of the situation. But this is not quite clear for the term feels is used here homonymously. It means in one case to perceive an item, e.g. I feel a table, or in the other to have a feeling, e.g. I feel glad. These two meanings are quite distinct.

7. Now if the word *feel* in the given proposition is taken in the second sense, then to say that the human feels value is to say that he has a feeling he calls value, or, in other words, value is a feeling. Cognition of value under these circumstances would simply consist in having the specified feeling. This theory of value is quick and easy but there are certain fundamental reasons why it is not acceptable. First, if value is defined as feeling *per se* it contradicts the logistic conditions of a definition of value (Essay on the Definability of Value, par. 2). Secondly, if value is defined as a specific feeling then (1) the feeling is undefinable (per previous essay), (2) value is that feeling only and no others and no other items including feelings could in truth be said to participate in value. Since, however, a variety of feelings are said to have value, value itself cannot be identified with any one of them.

8. The alternative sense of the word feel in the proposition

under consideration is that which refers to an item as perceived, e.g. I perceive a table. In this sense the human, in declaring that he feels a value in the situation means that he perceives something in the situation which participates in value and perceives this value in the thing which participates in it. This thing itself may be a feeling, i.e. the value perceived may be in a feeling. But the feeling which possesses the value and the perception of the value which the feeling possesses are two different items. We can conclude from this only, that feelings are in the class of things which may participate in value. This does not give grounds, however, for saying that feeling, or some kind of feeling, is the only thing which may participate in value and from feeling itself no such *a priori* grounds can be derived. If value is to be made completely subjective, a point of view which limits it to feeling, this conclusion cannot be reached merely from the perception of value in feeling. There is nothing known in the nature of value to prevent its presence in any of the other elements of a situation.

9. If these points are accepted the significant proposition follows that the cognition of value is independent of the presence of feeling. That is, feeling may or not be present, in fact may always be present, but yet it is not essential to the perception of an instance of value. Speaking for the sake of illustration we might say that a perceiving being even though it lacked all feeling might cognize the value in a situation, or in the elements of a situation, and this, even though it had no feeling about the value cognized. And inversely: that about which the organism has feeling may not be the object of a judgment of value. We may be indifferent to that in which we profess to perceive value or we may be emotionally excited about that to which we apply no value-judgment. And this applies likewise to desire: we may perceive value in that which we do not desire and vice versa. For desire is dependent on psychological and physiological antecedents and the cognition of value is only accompanied by desire where other causes do not divert the desire and when some causes produce the desire. It may be that among the latter is the cognition of value itself. Plato has said that to know the good is to desire it, but while this may be induc-

tively affirmed it is based on no logical necessity. For unless the good here is merely defined as the desired then it is not contradictory to know the good and not desire it. And if it is not contradictory it is possible. The absence of logical necessity here, however, may not be of great significance since as we shall later see there is an important relation between knowledge and desire.

10. Perception involves awareness and awareness involves a situation in which it is itself a passing relation. The terms of the situation are event-series or histories. On the entrance of these histories into actuality, i.e. on the presence of the awareness relation, value itself as an ingredient of the situation is cognized, i.e. enters into the awareness relation. The cognition of instances of value is, like that of other particular things, part of the passing into actuality of possible individuals or event-series. The cognition of value as a universal is derived from and suggested by the cognition i.e. immediate awareness, of particular instances. The relation of feeling to this cognition is not one of identity but rather one of classification, i.e. of genus and species, in the sense that feelings comprise one class of elements in the event-series (and a very extensive class) in which the presence of value is cognized. While feelings may be valuable, however, there is no ground for asserting that nothing but feelings may be valuable. Feelings themselves are not instances of cognition but of things cognized. They are actualized only in the presence of the awareness relation and in this actualization the qualities of value they possess may become objects of intuition. And so with the cognition of other types of value-instances.

11. The very important conclusion follows that value, like other qualities, is not somehow created *ex nihilo* but is discovered. Instances of value are such before they are discovered and the discovery of them is not the creation but the revelation of them. Valuational differences are given once and for all in the timeless realm of reality. Values like other elements in the world of particulars are subject to the possible and actual and the actual is only the presence of the awareness relation in the more independent, hence more real, realm of the possible, i.e. in the infinite nexus of intersecting histories.

To affirm, however, that the cognition of value-instances is a process of discovery suggests that judgments of value may be subject to error as well as to truth; it evokes, hence, the problem of the nature of error in such judgments.

THE PROBLEM OF ERROR IN JUDGMENTS OF VALUE

1. At this point we are prepared to ask: what is the nature of error in judgments of value and what are the causes of such error?

2. Before entering a discussion of these questions, however, there is a preliminary dialectic to be met. It may be objected that an inquiry into the nature of error in judgments of value is *a priori* gratuitous because judgments of value are not subject to error. The assertion of this proposition implies a claim to knowledge of the nature of value. The lack of such knowledge would render the statement invalid. The question then presents itself: what definition of value makes it in every instance knowable? There is one such definition to be found, namely, that value is feeling or some species of feeling. It is said that one may doubt the cause of a feeling but he cannot doubt the feeling. Or where the feeling refers to an object he may be in doubt about the nature of the object but he cannot be in doubt, or err, about his feeling. And as the value is taken to be the feeling—interest, love, pleasure, etc.—he cannot err about the value. For, according to the hypothesis, it is of the essence of feeling to be known and if it is not known it is not felt. But if it is known there is no error about it. Therefore, the argument concludes, there can be no mistake about value. We may be interested in a thing because it has the quality A. We may discover ourselves to be in error about its possession of that quality. But we cannot be interested and also be in error about our being interested.

3. In meeting this view there are two things to be said. First, that feeling or a species of feeling fails to satisfy the conditions of a definition of value (previous essays). This point, we believe, needs no further elucidation. Secondly the thesis that a human knows his own feelings and is never mistaken about them is neither logically necessary nor empirically substantiated.

The advance of empirical psychology indicates, on the contrary, that it is extremely doubtful whether humans have any but a very meagre and often confused awareness of their own feelings. Feelings come and go in any present and a number, at least, pass without attaining awareness. It follows that we can be in error about our feelings. Hence, if feeling, or some form of feeling is identified with value we can be in error about value and the argument fails.

4. We shall let this suffice then for the notion that judgments about value are infallible and proceed to a consideration of the nature of error in such judgments.

Errors, as we have seen (Essay on Error, par. 23) can be distinguished into three primary kinds: errors of rational discontinuity, errors of technique and errors of fact. The first, as it applies to judgments of value, we shall treat subsequently. We are here concerned with the last two. The former of these consists in defectiveness of logical inference. It may take either the form of verbalism i.e. the use of apparent for real words and result in non-reference or a form of paralogism. Error of fact consists in the predication of non-applicable qualities or characteristics to particulars or individuals, which predication is not made as the conclusion of an inference but is the result of an immediate judgment. It is the latter type of error, primarily, into which errors of valuation fall. The presence of value may be known by inference but the inference will begin from propositions not themselves derived by inference. If the latter are true propositions the inference will yield true conclusions. The importance of error is, therefore, far greater with respect to original data than with respect to inference. Error with respect to the basic propositions from which inference proceeds issues from the conditions of the primitive or immediate perception of value. We use the term perception here to refer not so much to what is called sense perception (seeing, hearing etc.) as to the awareness relation, i.e. intuition, in its whole scope. Sense perception is one species of such intuition.

5. Now we have seen (Essay on Awareness, par. 15) that the world of perceived things is. It is exactly as it is perceived. Error is here excluded. We may indeed postulate behind so-

called appearances a substratum of objects which are called real but these (*ibid.*, par. 18) are event-series which never become actual and considered as substrata, are constructs. They have existence but are not the same as the actual event-series with which they are related as substrata. Hence that which is perceived, is; i.e. it is part of the essence of the perceived to be; or, in other words, the perceived cannot be perceived unless it also is. Error thus being excluded from the realm of the perceived it might seem that we are led by necessity into acceptance of the view which we have just now found to be defective, namely, that error in valuation cannot exist. But this result is only apparent.

6. Perception and judgment are distinct. Our question is about the latter not the former. Don Quixote saw in the distance a dark advancing object and judged it to be an army. His perception was not in error but his judgment. We live in a world of judgments as well as a world of perceptions and whereas the one world is error-free the other will present you with as much error as you may desire to discover. In the one world A is always A and can be nothing but A. In the other world A is said to be B, C, D and so on. And where A can be said to be something other than A, there the possibility of error exists. The most significant type of error is, commonly speaking, not the mistaking of something for nothing but of one thing for another thing; it is in the realm of judgment where this most readily occurs. We may perceive an approaching object and judge it to be B, C or D each of which judgments may be false, although the perception on which the judgments are based is in no sense any less perception i.e. it is in no sense false because these judgments are false.

7. Now perceptions are clear or vague, distinct or confused. They vary in their degrees of clarity and vagueness. Those in which differences are sharp and emphatic are called clear, those in which they are not are called vague. And there is a relation, although not a necessary one, between the clarity of perceptions and the truth of judgments: the clearer the perceptions the greater the likelihood of truth in the judgments. If we see an object approaching we may judge it successively as it advances

to be several things but finally on clear perception we may judge it to be some particular item e.g. a horse. On the whole this judgment will be, when the perception reaches its maximum clarity, taken as final. But even when perceptions become clear they may be misjudged e.g. as in the case of imitations, where we judge an imitation orange to be a real orange. The perception in all of these cases is not at fault; rather the judgment about the perception.

8. Let us examine now the pertinence of these considerations to the cognition of value.

The perception of particulars consists in an awareness relation between event-series. Judgments are events within event-series. Judgments can be true or false; perceptions cannot. Where judgments refer to and are anteceded by perceptions the perceptions are said to suggest the judgments i.e. to cause them.

9. Judgment of value is one type of judgment. It is suggested by the perception of a situation or one or more of the elements of a situation. Where the judgment, however, suggested in this manner corresponds to no value in the situation it is an erroneous judgment. Such an erroneous judgment may arise with respect to value as well as with respect to the other characters of a situation. The question whether a value is subjective or objective is here irrelevant. Whether the value is in the feeling of the subject, in the object or in the whole situation, the perception of the situation may induce an inaccurate judgment about it. An organism may make false judgments about the value pertaining to its feelings as well as about the value pertaining to other items.

10. Now judgments of value differ from other types of judgment not in themselves but in their relation to the perceptions which suggest them. These perceptions, in the case of value, are rarely clear, unmixed and definitive. We have seen, however, that judgments about perceptions tend to be true in proportion as their perceptions tend to be clear. Perceptions of value, however, are never clear. Judgments of value are, hence, never indubitable. As a situation in all its complexity and ramification is seen more clearly it is probably true that judgments of value concerning it attain greater accuracy. But it is highly doubtful

whether judgments of value ever arrive at a degree of validity which warrants their acceptance as certainties. We arrive then at the conclusion that judgments of value instead of being free by necessity from all error—which was the thesis discussed at the beginning of this essay—are, on the contrary, rarely if ever subjects of certainty. Their uncertainty issues from the vague and mixed nature of the perceptual data on which they rest. The perception of values is not an affair of unintermittent vision but of discernments and insights. Value, in the events that make up particulars, is, like the sheen on a swallow's throat or the flash of red on the wing of a flying blackbird, seen by glimpses and intuitions. Such are the conditions of the cognition of value.

11. We are now, bearing these things in mind, in a position to consider the thesis known as the relativity of value. This thesis tends to confuse discernibles and to emphasize ambiguities. It identifies, in short, value with the cognition of value. Value as an indefinable element in a situation may be in the situation in its own right and not dependent for its presence on its relation to anything else. But judgments of value are in an entirely different category. They are relative to the perception of the judger as well as to the whole circle of psychological particularities which differentiate him from other individuals. Since, moreover, all perceiving individuals differ in nature their judgments about value will tend to differ even more than their judgments about other qualities. But judgments of value are subject to error. Differences in judgments of value are not identical with differences in values themselves. It is, hence, a *non sequitur* to argue from the relativity of value-judgments to the relativity of value. This or that man may be able to discover this or that value but the relative differences in their capacities to discover value are not relative differences in the values which they discover.

CLASSIFICATION OF ERRORS IN JUDGMENTS OF VALUE

1. Discourse about value is subject to both formal and material error. Like other forms of reasoning it moves, if intelligible, within the sphere of logical consistency. Hence on the formal side, judgments of value in so far as they form part of a system of inference are susceptible to the general logical errors which arise in the construction of inferences e.g. *petitio principii*, *ignoratio elenchi*, undistributed middle, illicit major, ambiguity or four terms etc. Owing, however, to the difference judgments in appraisals of value and to the multitude of varying tastes there is a common impression that propositions referring to values somehow escape the necessity of logical consistency. That this attitude is invalid is a large part of the thesis of Plato's early dialogues. If value is anything at all it is intelligible. If we are going to make definitions and propositions referring to values we soon fall into triviality and insignificance if we ignore the circumstances that these definitions and propositions have implications and in this oversight say things that lead to contradiction or incoherence. A theory of value requires a logic. With Plato the development of such a theory and of a general logic of rational expression went hand in hand.

2. We are not here, however, primarily concerned with formal error in reasoning about value. This type of error is not peculiar to any special subject but possible wherever inference is employed. It is with material errors—errors not of method but of subject-matter—that we are concerned. Such errors fall into three classes: errors of existence, errors of kind and errors of degree.

3. (I)* Errors concerning the existence of value assert either (1) the presence of value where it is not or (2) the

* Here as elsewhere in this volume Roman numerals refer to divisions of the argument; Arabic to paragraph numbers.

absence of value where it is. Let us take an example. The saying: all is vanity, asserts according to some interpretations that there is no value. But if there were no value there would be no meaning to the word vanity. If, however, value is, then there are instances of value. Therefore if all is vanity there is some value. But if there is some value then all is not vanity. Hence the saying all is vanity asserts that there is not value where there is.

4. There is, on the other hand, an apophthegm which affirms that all is perfect. This is sometimes interpreted to mean value is everywhere present in infinite degree. Then nothing is better or worse. But there is a possible world in which things are better or worse; and a possible world is. Therefore all is not perfect and the apophthegm asserts that there is value where there is not.

5. It would not be difficult to indicate many instances of this type of error. They occur frequently in universal propositions predicating value: proverbs and common generalities. The error of asserting value to be where it is not or vice versa may arise in respect to propositions attributing value to particular situations; it is least discernible, however, in propositions the implications of which have to be unfolded in order to detect it.

6. (II) Error of kind consists either in the non-recognition of the kinds of value present or in mistaking one kind for another. A consideration of this type of error then, demands an analysis of the kinds of values. This subject we shall treat elsewhere. It may be remarked, however, that in a certain sense it is inaccurate to speak of kinds of value. Value in itself is identical and there are no more kinds of value than there are kinds of whiteness. But value appears, or is present, in different types of items and hence is divided into species according as it becomes manifest in different species of items. We speak of the kinds of value just as we speak of the kinds of whiteness e.g. the white of a cloud, the white of snow, the white of a flower, etc. We shall not here, however, proceed to a classification of the kinds of value but shall point out certain instances of the type of error we are considering.

7. Non-recognition of the kinds of value present occurred

in the instance of those thrifty Dutch housewives who wrapped up their bric-a-brac in Rembrandts. The canvas possessed two sorts of value, namely, usefulness or derivative, and essential or intrinsic value. The intrinsic value of the painting, however, was simply ignored. Hence the impractical and greater was sacrificed for the practical and lesser value. The same type of error occurred when the early Christians scribbled apocrypha over the texts of Euripides.

8. (III) Errors of degree in the judgment of value consist either in the under-estimation or in the exaggeration of the value of an item either in terms of itself or in comparison with something else. Thus Don Quixote over-estimated his fasting and Sancho his food. Errors of degree are probably the most frequent errors of value-judgment since scarcely any situation in the history of the organism is wholly free from the necessity of making judgments of comparative value. Such judgments occur or are implied in practically all behavior from the whisking of a fly away from the face to the determination of a life profession.

THE CAUSES OF ERROR IN JUDGMENTS OF VALUE

1. A cause is commonly considered to be an event that immediately antecedes and engenders another event which is called its effect. For this notion, however, we substitute the view that a cause is an event in a non-temporal history to which another event is immediately connected by a relation of dependence. The history is changeless except as it enters and leaves actuality. In a strict sense a cause does not temporally engender anything. The necessity which is taken to determine the sequence of events in a history lies not in some factor which brings about an item which in no sense existed but in the pre-existent connection of events in histories. Where events are preceded by like events causation is said to be uniform. Where causation is uniform empirical science can be systematized and expressed in principles. In investigating the causes of error in judgments of value we purpose to discover such principles as describe either the kinds of events on which the commission of error in judgment of value depends or the conditions of cognition which accompany such errors.

2. (I) Value unlike color and the similar characteristics of a situation is never clearly perceived. Hence judgments about it are never based on distinct perceptual data. And this is a primary concomitant of the three kinds of error in valuation, namely, those of existence, of kind and of degree.

3. Perceptions differ in many ways. Some of these ways, however, are more important than others. The differences which are most significant are those which differentiate perceptions into the following classes: steady or fleeting, vague or clear, repeated or unrepeated. Literally speaking no perception is ever repeated in the actualization of a history. Similarities, however, are sufficiently great to warrant, for common usage, the term repeated, e.g. one is said to look at the same picture twice.

4. Between these characteristics eight combinations are possible ranging from fleeting, vague, unrepeated to steady, clear, repeated. The type of perception involving the last group offers

the best opportunity for the formation of accurate judgments of value. This observation requires little exposition. It cannot, however, be raised to the status of a principle without exception, because there are some events whose fleeting nature i.e. whose brevity is essential to their value, e.g. certain gestures in a dance.

5. (II) Perceptual variation is not, however, the whole source of error in judgments of value. There exists another class of causes which lie within the individual himself, namely, the emotions.

6. Intuition (i.e. seeing in the widest sense of the term) and feeling are two fundamental sides of the psychological nature of animate things. Feeling, however, is profoundly different from intuition. The intuition or seeing of a thing is equivalent to becoming aware of it. Feelings on the other hand like other items subject to cognition are things of which we may become aware. They are events in the event-series which constitutes an organism. There is, nevertheless, a relation between feeling and cognition such that the one is affected by the other i.e. types of the one correspond to types of the other. In so far as feelings tend to frustrate cognition they also tend to introduce error into judgments of value. The exception to this lies only in the case where the value to be cognized is in the feeling itself. In this case the presence of the feeling is essential to the cognition of the value. But even here the feelings may be of such a nature as to distort the judgment concerning the value which it bears.

7. Now the question arises: in what way does emotion pervert judgment of value?

The cognition of value is either immediate or inferential. But both of these processes are subject to suspension or interference by the presence of emotion. Intuition or immediate perception is disturbed by the deflection of the attention to the emotion. Thus the observer is not only concerned with the thing or situation to be evaluated but with himself i.e. with his emotion. As a consequence his perception is a confusion of relevant or transpersonal with irrelevant or personal elements. The undisturbed gaze of the seer absorbed to the point of self-forgetfulness in the subject of his contemplation, if attainable at all, is rendered impossible by the presence of emotion. And to the

extent to which the attention is thus diverted the immediate perception tends to be inadequate and the judgment of value to be erroneous. But in addition to this, where emotion in any intensity is present in such a manner as to interfere with immediate cognition, there arises a tendency to preperception i.e. to *read into* the situation that which is agitated by the individual's desires. And thus, in sum, by obfuscation and by preperception emotions conduce to error in the judgments of value which are based on immediate cognition. There remains the case of inference.

8. In the case of inference emotion is notoriously disturbing. Intensity of emotion does not exclude ratiocination but it renders it more and more difficult until a point is reached where it is practically impossible. Hence violent emotion tends to imprison an organism to its restricted actual present. It excludes the capacity for inferences which point to the future: to immediate sacrifices for subsequent benefits. Hence humans in the throes of agitated feeling act as if the whole meaning of their existence depended on the moment in which such feelings are dominant. Aside, moreover, from this paralyzing of the faculty to draw inferences emotion tends to pervert them when they are drawn. This process is sometimes called by the misleading name of *rationalization*. It ought rather to be called *irrationalization* or *derationalization*. Only in an ironical sense can it be designated as the first. The process, however, consists in the reaching of conclusions in either of the two following ways. First, a desired conclusion is set up and then it is supported by reasons which are manufactured expressly to sustain it. Or secondly, it is supported by a method of more or less intentional parallogism in reaching a conclusion. The desired conclusion although latently present and furtively recognized is reached by a system of casuistry which is accepted, not on its own merits, but because it culminates in results which satisfy the emotional demand. The second type of *rationalization* or rather *irrationalization* is the most pernicious: the reasons in the first may be quite valid although their intrinsic validity is not the aim of the judging subject. The second rarely attains this merit. By the foregoing two processes, however, i.e. either by the suspension of the

powers of inference or by *irrationalization*, i.e. the reaching of desired conclusions by *ad hoc* methods, the presence of emotion tends to pervert the judgments of value which are based on inference.

9. Again, more generally, in both of the aforementioned ways, namely, the obfuscation of immediate cognition and the perversion of inference all three of the types of error in judgments of value, i.e. errors of presence, kind and degree are induced. Intense emotion tends to inject all of them into the estimations of the judging subject. Lesser intensities of emotion tend to emphasize errors of degree.

10. Feeling may be divided into sensation and emotion. Sensation is a bodily state which may have an external cause but which is not, as sensation, directed toward that cause e.g. pleasure, pain, touch, warmth, etc. One can feel pleasant without feeling pleasant about something or warm without feeling warm about something. Emotion on the other hand is feeling which involves a relation. This relation connects the emotion (which is usually identified with the self) with an object to which it is directed. Jealousy, for example, is an emotion not only involving another object but two other objects with a special kind of relation between them.

11. Since emotions are directed toward objects they tend to fall into two classes, namely, aversive and attractive. Again their object may either be the self or another thing. We may take as examples of aversive and attractive emotions, hate and love. When these are directed toward the self as object they become humility and pride. Since the former is painful and the latter pleasant these emotions are active in coloring judgment of value especially when they concern predicates about the self. We can say, in general, that aversive emotions tend to distort judgments of value by under-estimation and attractive by over-estimation. It is nothing new that humans in love exaggerate the merits of the loved object attributing to it properties it does not have and magnifying the favored qualities which it does have. The principle is common and universal. It is, however, not without some exceptions. Aversive emotions depress, attractive, ele-

vate judgments of value, but the emotion of fear which is aversive may often operate in the reverse direction.

12. Emotions, however, do not occur in definitely differentiated types of expression. They are present rather in blends and complexes. Single types of emotion are fused with others and it is rather by comparative vividness than by evident discreteness that they are recognized. Just as in the case of a color pattern one color may be dominant, so in an emotional complex one type of emotion may be outstanding. But there are blends in which no single emotional type functions as its major quality. The analysis of these things, however, we shall take up at another time. The question with which we are immediately concerned asks in what way these complexes effect judgments of value.

13. Complexes are either of supplementary or of conflicting emotions. Supplementary complexes are those in which the emotions are congruent and not opposed e.g. a complex of fear, hate and envy. Such complexes act, like the single emotions which they contain, in deflecting the individual from accurate judgment. They exercise this influence in proportion to the number and intensity of their component emotions. Where the general tone is aversive there is a tendency to depreciate; where attractive, to appreciate. In so far as one can be aware of his emotional state he can be aware of the tendency which is giving bias to his judgments of value. E.g. if a human is subject to a complex of a vividly attractive nature he can conclude with great degree of probability that his judgments of value concerning the thing or situation related to his emotions are erroneous in a deferential sense.

14. Complexes of the second class are those which involve conflicting emotions; e.g. the organism both loves and hates, hopes for and fears, etc. the same object at the same time. In such complexes the conflicting emotions are heightened by their opposition. Such a conflict leads to consternation which quite removes the capacity to make accurate judgments of value either by immediate apprehension or ratiocination from true judgments. Whereas, in short, coherent complexes i.e. complexes of supplementary emotions, according to their intensity tend to produce exaggerations of over- or under-estimation, self-conflict-

ing complexes tend to inhibit the power of judging altogether. They form dissociations which destroy any unified action of the organism.

15. Now to summarize: Error in judgment of value, in a significant number of instances, is accompanied by the presence of emotion as a cause. Emotion is feeling directed towards an object. Emotions are, in varying degrees, either attractive or aversive. Attractive emotions give rise to over-, aversive to under-valuation. Emotions, however, do not occur singly but are inter-connected into complexes. Complexes are supplementary or conflicting. A conflicting complex gives rise to consternation which perverts value-judgment to a maximum degree.

16. (III) We have now considered two sources of error in judgment of value: indistinct perception and emotion. There are two others which merit attention, namely, habit and custom.

Habit consists in the formation of a neural behavior pattern of such a character that the act resulting from the functioning of the pattern is repeated with greater or less exactitude whenever the neurons comprehended in the pattern are stimulated in the same manner. Mere repetition of an act a number of times is not habit. Habit is something that is formed. It may be formed by the commission of an act once or a number of times. The nature of habit, as we shall here use that term, is not determined wholly by the repetition of like acts but by the formation of neural connections. Repetition is more an expression of habit than habit a result of repetition. Some acts repeated frequently for some organisms are not habit-forming; some repeated seldom, or occurring only once, are.

17. Habit may apply to the whole psychology of the organism including the formation of judgments. Judgments may be habitual and when habitual may endure independently of their truth or falsity. It is from this that the importance of first impressions arises. They establish an attitude which persists irrespective of their invalidity even when such invalidity is later discovered. It is not at all uncommon to find men who habitually recur to judgments the defectiveness of which they have pre-

viously recognized. These conditions apply not only to judgments in general but to judgments of value.

18. When a judgment becomes habitual it tends to establish itself fixedly and obstruct other judgments on the same subject. The organism becomes specialized to a certain set of responses. In this manner whole realms of value may be shut out from the view of the specialized individual. Habitual judgments dominate the attention and, valid or invalid, they persist until some reaction occurs sufficiently disconcerting to dislodge them. When the individual is aware of the habitual character of his judgments of value he may be stimulated to re-examine them and if not to change them, at least to hold them more tentatively. But the majority of humans live in a certain somnambulistic oblivion of the habitual nature of their value-judgments. They are given over to the cumbrous momentum of psychological inertia.

19. The effect of habit is to restrict, on the one hand, and to intensify on the other beliefs about the value character of standard or common situations. It produces error in judgment of degree, to less extent error in judgment of kind but principally error in the judgment of the presence or absence of value. It renders the individual impervious to values excluded from the scope of his habitual behavior. There is frequently a refreshing directness and originality in the judgments of value which children make—a novelty and variability which arises because the children are as yet unpetrified by specialism and by the formation of habitual value-judgments. To them the world is an open world. They are not stereotyped by set behavior patterns nor perverted by custom. Custom may later coöperate with habit, however, in producing misvaluation.

20. We use the word custom here to designate the participation by two or more organisms of the same community in the same habit. Individuals are in the same community when they are so related that communication between them may and does occur. As the communication is more and more frequent the group is more and more a community. Generally speaking the family is the closest community, the neighborhood next, and so on out to the world at large.

21. The habits that make up the body of custom are more

tenacious than private habits. Custom has the weight of community feeling behind it and is more domineering than private habit. Social habits become so dominant over the judgments of men that the latter are induced to believe the most palpable absurdities despite the clearest evidence of their fallaciousness. Such customary judgments can be seen in the valuations placed on certain inept types of costume, headdress, bodily mutations or disfigurements or in many religious rites and taboos. Psychological aberrations of this nature are present in every age and every community. Anyone who would behold the values of existence must sooner or later recognize, not simply the societal advantages of custom, but, at the same time, the narrowness placed upon his judgments of value by it. Custom, like habit, but more effectively, causes error of judgment referring to the presence or absence of value. Men do not see values where it is not customary to see them. Where, moreover, custom dictates the attribution of value to a situation, they attribute value to it whether it has value or not. Such errors about the presence or absence of value occur most flagrantly in dogmatically restrictive i.e. in ascetic or puritanical communities or in communities given over almost exclusively to some one type of activity e.g. militarism or commerce.

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THE SIGNIFICANCE OF SCEPTICISM IN JUDGMENT OF VALUE

1. The causes of error in judgments of value may be modified but not eliminated. Or if eliminated this fact itself cannot be apodictically known. Hence with human nature, such as it is, no judgment of value can be exalted to certainty. Belief may be vivid and conviction immovable but neither the vividness of the one nor the tenacity of the other is demonstrative of the truth of the judgment. Beliefs and convictions are psychological phenomena and are not necessarily—and in common life are rarely—based either on evidence or logic. Hence the intensity of a belief is independent of its truth. Since the field of value, however, is the locus for intense beliefs and for unshakeable convictions, these observations are peculiarly pertinent to judgments about it. One can almost argue that if he has a strong belief on a subject of value he is liable, in some degree, to error, and in so doing learn enough to suspect his beliefs.

2. Because of the conditions of cognition to which humans are subject in drawing conclusions about values the possibility of error is, as we have seen, ineradicable. This applies to all judgments and all individual judges and is sufficient to establish, for those who consider the subject, a basis for universal doubt. The realm of value-judgment is a realm of scepticism; not that humans are actually sceptical but rather that they have reason to be. Life is not lived in the absence of value but it is lived in the absence of accurate judgment of value. One of the primary factors in the propagation of this defect is lack of awareness of the defect itself.

3. Since error is ubiquitous in judgment of value the rational attitude towards such judgments is scepticism. The judge may for the sake of effectiveness in practice accept a valuation as if it were final. However he will realize, provided he has acquainted himself with the uncertainty of the cognition of value that his judgment is subject to doubt. Being subject to doubt he will con-

sider it provisional with respect to time, relative with respect to himself and uncoercive with respect to others. If this is the true condition of value-judgment, the question arises: why is not such an attitude prevalent; why is the realm of value that in which humans show themselves to be most self-complacent and uncompromising? The answer is not far to seek. As we pass from primitive to developed society i.e. from ignorance to learning, we find an increasing cosmopolitanism of view, a flexibility and humanity of manner. A sophisticated and intelligent scepticism tends, among those who are not enmeshed in the religious, or other, taboos of their wild ancestors, to replace the harsh and dogmatic naïveté of the primitive. The major source, in short, of inflexibility and tight-mindedness in judgments of value is ignorance. Where ignorance is cultivated as in popular religion, in spite of panegyrics to love and charity, the tendency towards absolutism in value judgment is accentuated. Such culture produces refurbished savages but not civilized men. On the other hand, in proportion as the finiteness of the particular organism is more adequately understood and its limiting effect on cognition is realized, the bleakness of dogmatism tends to vanish before the geniality of scepticism. The individual understands that it is not necessary in order to preserve the values of his own existence to wipe out the individual differences of others. A certain amount of *sophrosyne*—of graciousness, is found to be an attitude not misplaced in the character of men. The attainment of this attitude is, to a major extent, the attainment of civilization itself.

4. It should be noticed that current attitude towards value has something to do with the character of a civilization. The investigation of value is not an ineffectual thing. It is true that a small proportion only of a group are ready by capacity or training for the conceptual treatment of value. Such a logical study must be impervious to those who by chance or by nature are not prepared to envisage things under the relation of universal and particular. This relation, however, lies at the basis of an adequate treatment of value or any other subject. It involves the essential difference between thought and impression. The latter is by its nature irreducibly fragmentary and is incapable of pro-

ducing a consistent conception of any category. But cognition through rational relation is, in some degree, general. It is necessary in order to meet the practical problems engendered in the life of a particular human lived in juxtaposition with other partly destructive particulars. Conceptual understanding is hence forced, to some extent by the nature of circumstance, onto men. A system of law, for example, cannot be discovered without the cognition of legal categories and so on for other practical affairs. The intellectual basis is thus prepared by which men can attain a conception of value, which, when understood must, since it affects attitude, have some reflection in behavior. Now, although men act by no means with unswerving consistency, the clear recognition of the problematic character of judgments of value has some civilizing effect. It produces some reservation, some readiness to let others work out their destiny even though the values in that destiny are not those emphasized by the judging subject. It makes a man realize that the realm of being is, in its valuational aspects, vaster than any conception of it which a finite organism can have. Such a realization has the salutary effect of making him understand that there is just a bit of self-glorification on the one hand and obtuseness on the other, in the unwitting assumption that the whole majestic weight of goodness in being focusses down and rests on his own shoulders or depends on the unimpeachability of his own judgments.

5. Now it is very easy to say that tolerance is desirable and intolerance is undesirable. It is quite another thing to give an intelligible account of this proposition and attribute some meaning to it beyond that of an uncriticized platitude. There is no a priori reason why some instances of intolerance might not be good and some instances of tolerance bad. In common practice there is a limit to the tolerance of all men. This limit may be narrowly or widely drawn. It suggests, however, the notion that it is not tolerance in itself that is good but tolerance in certain relations or in certain situations—for if tolerance is good in itself then every instance of it is good. Where ends involving action are to be achieved tolerance may be granted up to the point where it does not seem to interfere seriously with the achievement of the ends. Beyond this point it is, as a rule,

snuffed out without much ado; it is believed that further tolerance defeats both itself and the end to be reached. In practically all "success" there is intolerance somewhere. The success however is humanly greater the less there is of it. Judgments of tolerance ramify into the whole complexity of judgments about the value of ends. But any discussion of tolerance must be unprecise which does not in some sense delimit the meaning under which that name is to be understood.

6. We shall designate tolerance by a negative rather than a positive expression. By tolerance, namely, we refer to the logical opposite of intolerance. This defines it sufficiently if we indicate what we mean by intolerance. By intolerance we mean a relation of active opposition between two or more humans in which the one opposes himself to the other on account of differences in beliefs which he holds arbitrarily. A belief is held arbitrarily when it is held without demonstrative support. Its acceptance is a psychological rather than a logical matter. The propositions of geometry are not arbitrary because their ground is transpersonal; many of the propositions of ethics are arbitrary because their ground is personal. A clear recognition of the distinction between logical conclusion and psychological assent is indispensable for an understanding of the nature of value-judgments. Let us continue, however, with the exposition of the terms in our definition of intolerance. By opposition we do not refer here to mere disagreement about the logical validity of an opinion or proposition. We mean active physical or psychological opposition. It is quite clear that the former i.e. mere disagreement, does not involve intolerance but rather furnishes the conditions indispensable to tolerance. Where there is no disagreement it is not possible either to be tolerant or intolerant.

7. Intolerance may be either physical or psychological in correlation to the kinds of active opposition. Physical intolerance is intolerance in conduct; psychological intolerance, intolerance in attitude. Intolerance of conduct expresses itself in the coercion, destruction or subjection of others or in the attempt at these things. Intolerance of attitude expresses itself either in psychological coercion or uncritical condemnation. An intolerant man is one who is readily given to compulsion with respect to

the acts, or to condemnation with respect to the beliefs of those with whom he does not agree—not so much because of the nature of these acts or beliefs as because he does not agree with them. The nature of coercion we shall discuss in a subsequent essay. It is evident that intolerance has two significant aspects: psychological and valuational. It goes back to an attitude at once dogmatic and uncritical about judgments of value. Intolerance, however, is related by opposition to tolerance. By tolerance then we mean an attitude which is at once sceptical and critical about judgments of value. Tolerance in conduct is the rejection of coercion in behavior towards others and tolerance of attitude is the withholding of a condemnation directed towards the beliefs of others because they are different. It does not follow from the nature either of tolerance or intolerance that the one is always constructive or the other is always destructive of value, although this *may* for the most part be true. Some further ground is necessary to distinguish the valuational status of these two attitudes. It is possible that coercion might lead to good and tolerance to bad results. Although this could not be used as an argument that intolerance is a value in itself it might be used, and in fact is used, to justify it as a means to other ends i.e. as having derivative value.

8. Now if we say that a human may be coerced to the attainment of value or to the realization of valuable ends then intolerance may have at least derivative value. The value of intolerance will vary as the value realized by it. But it is here to be recalled that the judgments which are terms of a difference relation which motivate intolerance, must be, whether true or not, problematic. If a judgment is demonstrably true it does not issue from the bias of the judger. There is in all intolerance an element of arbitrariness. If, therefore, all judgments of value were demonstrably true irrespective of the nature of the judger there would be no intolerance and all action based on these judgments would lead, in so far as it effected its end, to indubitable values. There would be, moreover, no arbitrariness in such action. For example the coercion of men to fundamental law or of children to education is not held to be intolerance. The possibility, therefore, of intolerance lies in the problematic nature of

judgments of value. If these were certain in the sense that they were apodictically knowable then this possibility would be sublated. But, by definition, tolerance is not possible where intolerance is not possible. Therefore the possibility of error in the judgment of value is also the possibility of the existence of tolerance. Because men can, in other words, be mistaken about judgments of value they can be tolerant. If all such judgments were indubitable the possibility both of tolerance and intolerance would be removed. But, furthermore, since all judgments of value are to some degree dubitable, it follows that intolerance implies an error about judgments of value themselves, namely, it acts on doubtful judgments of value as if they were indubitable and in so doing removes its own rationale. Uncertainty thus in judgment of value provides the possibility of tolerance and the scepticism which is the cognitional correlate of that uncertainty is the basis of tolerance in human conduct and attitude. Intolerance, on the other hand, can only arise from a confusion of the apodictic with the problematic.

9. In conclusion taking the hypothetical world in which all judgments of value are indubitable there would be no disagreement about values, since all values would be envisaged in one way. A's knowledge about the good for B would coincide with B's knowledge about the good for himself and in so far as value is concerned it would be impossible for A to coerce B against his own judgment or condemn B's opinions without contradicting his own.

10. It would no doubt be a great advantage to obtain certainty in judgments of value, for then their application to thought and practice, to individual and society, could be fixed. Education could be made an exact science and such coercion as might be employed would reach the end of value without chance of defection. But since we cannot obtain certainty in these judgments we are obliged to take as the attitude suggested by critical intelligence the position of scepticism. This scepticism has the highly significant meaning that it implies, as a logical consequence, tolerance in judgment and flexibility in action. The importance of scepticism in judgments of value lies precisely in this point. It removes any intelligible *raison d'être* for intoler-

ance in these matters and makes intolerance, arising as it does from the species of ignorance which is confusion about the status of value-judgments, an expression of arrogance. When we use a universal word like *value*, however, the foregoing propositions may be logically understood, but they are not so concretely clear as when we refer to special instances such as right and wrong. People who entertain immovable convictions about right and wrong and assume a gratuitous prerogative of foisting these onto others irrespective of the differences of these others in temperament and opinion, entertain just a little egotism on the one hand and barbarism on the other.

II. Although men are doomed to strive for values which they can see only with greater or less, never with absolute clarity, this very uncertainty has a valuational significance of its own. It furnishes the basis for an adjusting geniality in the attitude which colors the mutual interrelations of men. The value of this sort of tolerance is greater than anything that absolutism has to offer. It is said that men ought to follow their convictions; but that is a very indiscriminate statement. A conviction like any other form of belief can be silly. It might be somewhat more significant for men instead of becoming aggressive about their convictions on the right and wrong of themselves and others to subject their convictions to a little analytical criticism; to endeavor to gain an understanding of the validity that can with some intelligence be attributed to them. An application of Socratic scrutiny to convictions produces a surprisingly wholesome result; it modifies the encrusted strata of valuational prejudice accumulated during the course of an unexamined existence. Men begin to live enjoyably when they learn how to doubt intelligently. At such a time their interest is not consumed in mutual coercion and condemnation. It is expressed rather in the endeavor to understand the nature of that which is to be evaluated before the luxury of evaluation is indulged in. And this consequence we take to be the significance of scepticism in judgment of value.

THE VERIFICATION OF JUDGMENTS OF VALUE

1. Some propositions require no verification, others are incapable of verification. The former class consists of propositions which are considered to be certain. It is in terms of these that all other propositions are verified. A proposition is incapable of verification when it cannot be referred to a certain proposition as a criterion.

2. There are no judgments of value in which probability does not enter, hence there are no judgments of value which do not require verification. All judgments of value, however, are not capable of verification and hence it is apropos to consider in what verification of such judgments consists and what classes of propositions concerning value are, and what classes are not capable of verification. There is a class of judgments of value which both require verification and are partially capable of it.

3. The verification of a proposition consists in the exhibition of the agreement between a proposition which is doubtful with one which is true. Only propositions which there is reason to doubt require verification. Adams and Leverrier asserted the presence of a planet Neptune at a given declination and right ascension in the celestial sphere. This proposition unverified was doubtful, i.e. not a priori certain. It was found to agree, however, with the true proposition that a star such as that described was seen through a telescope at the point indicated. The agreement with the true proposition constituted the verification of the doubtful proposition. Assuming now that the verifying proposition is true without qualification i.e. absolutely true, it follows that the verified proposition passes from doubt to certainty. In other words it is revealed to have the validity of its criterion.

4. There are two kinds of verification: complete and partial. Complete verification occurs where a proposition passes from doubt to certainty. Partial verification when it passes from lower to higher probability. Strictly speaking complete verification is the only genuine verification but it is especially rare.

5. Verification is complete or partial according to the degree of certainty which attaches to the proposition which is used as a criterion and according to the agreement between this proposition and the proposition to be verified. Just as water will not rise above its own level, the validity of verification cannot exceed the validity of the criterion employed. And verification can never be perfect unless that criterion is unqualifiedly true. Perfect verification can only be realized where some proposition which cannot be doubted is employed. This gives rise to certain errors about verification since the tendency is to ignore the point.

6. If A asserts that he read a certain poem on a certain page of a given book and his assertion is questioned he can turn to the page and show the poem. Practically this would be taken as verification. But the poem's being there when A shows it, is only proof by inference that it was there when he read it and even if it was there at some previous time, the fact of its having been there is no verification of A's having read it. Hence A's verification would be of a comparatively partial kind. It would, however, not be valueless since verification is not primarily a logical matter having to do with simple truth and falsity but rather a logico-psychological matter having to do with the attitudes of doubt and certainty. When a proposition is verified it does not involve a change in the proposition itself but rather in the attitude of the knower towards it. The proposition if true is equally true before and after verification. Verification merely tends to reveal its truth (or falsity) and in so doing to promote certainty (or doubt). But a false proposition may be partially verified if the criterion of verification itself is subject to any doubt. And a true proposition may lack verification. We may be certain of a false proposition and more so in so far as we lack logical practice, and on the other hand, doubt a true proposition. Verification then fills its proper function when it engenders certainty with respect to true and doubt with respect to false propositions. It never makes a proposition itself true or false. Even propositions about a verification itself are verified by verification. These, however, are true or false independently of the verification which verifies them, except in case of simple assertion. For example the proposition: x is verified, is false if x is not verified but becomes

true if x becomes verified. Such propositions are rendered true or false by verifications but they are not themselves primarily the propositions to be verified. But if we ask for a verification that these are verified we fall into a *regressus in infinitum*.

7. If A says to B: this figure is square, the proposition is not subject to complete verification. For the term figure is ambiguous: is the figure that which is seen only or something persisting independently. No means are available for detecting an absolute square. If A says: this that you see will look square to you, the proposition can be verified by B if what he sees looks square to him whether it is or not. For B knows immediately his own perceptions and there is no basis to doubt them as perceptions. But although the proposition is subject to complete verification it may mean little to A for his term—this that *you* see—may not refer to what *he* sees.

8. The demand for verification hence involves the demand for true and certain propositions within the universe of discourse in which the proposition to be verified exists. We are at present concerned with the verification of judgments of value. Since we can find no judgments of value, however, which involve certainty complete verification in this field is excluded. We shall have to be content with such propositions as criteria which are derived from methods yielding the greatest probability. While absolute verification is not possible a kind of verification is attainable.

9. Judgments about value, as we have indicated, are incorporated in propositions about its presence, kind and degree. Error may arise with respect to each of these, hence verification with regard to such propositions, if available, is desirable. Verification may be by inference from other propositions in the manner just now suggested or by experience. Verification by inference is direct when one judgment of value is inferred from another judgment of value by deduction; it is analogical when a judgment of value is inferred about one thing from the resemblance of that thing to another thing, by analogy. Verification by experience may be direct and immediate from the experience of the subject himself or indirect and by authority. Since men are more or less cognizant of the relativity and uncertainty of judgments

of value in any field, yet nevertheless entertain a desire for certainty, particularly, for example, in ethical matters, they attain a fictitious verification by setting up authorities. Authorities, however, are restricted to the same methods of value judgment as others and their own differences indicate their shortcoming in reaching the apodictic in these matters. They can, however, increase the probable validity of their judgments by carrying the methods farther than others and by advanced cultivation of their special fields. Any abject submission to authorities, however, or acceptance of their pronouncements without reservation or qualification, indicates little else than an undiscernment both of the nature of the judgments of value themselves and of authorities who judge the values. But while authorities may not be infallible they may be able to point out to those with reactions like their own, values which would otherwise be overlooked. Let us consider, however, the different species of value judgment in terms of their susceptibility for verification.

10. Judgments referring merely to the presence or absence of value may be verified by direct inference where it can be shown that a particular is an instance of a universal to which intrinsic value is attributed. E.g. if intrinsic value is attributed to the quality of beauty then to verify the proposition that this or that particular thing e.g. a man or a tree or a landscape or a flower has value, it is sufficient to indicate that it is an instance of beauty. Or again it may be inferred that if there is any special value in the nature of humanity, then a foreigner, as a human, may be the possessor of value as well as a countryman. So with any other instances of value-bearing universals. Judgments of presence or absence may also be verified generally for particulars by analogy by indicating that one particular the value of which is doubtful, is analogous to another particular the value of which is not questioned. It may be inferred that one piece of sculpture is valuable because it has the same kind of symmetry as another piece which is highly esteemed. It is evident, however, that all such verification by analogy is highly problematic.

11. The other methods of verification of judgments about the presence or absence of value depend on experience either direct, or indirect by authority. Their validity depends solely on

the discerning power of the subject or of the authority. Since this varies with different individuals anything like uniformity is not to be expected.

12. We shall not prolong our analysis by extending it to judgments of degrees of value and judgments of kinds of value since they are subject, in so far as they are subject at all, to the same kinds of verification which we have indicated with respect to judgments of its presence or absence. It should be remarked, however, that among the various species of judgments, judgments of kind are more susceptible to verification than the others for the kinds of value are marked off from one another with considerable clarity. Judgments of presence and degree must remain to a large extent under the dominion of the relativity arising from particular differences in the judgers.

KINDS OF VALUE

1. Value, in truth, is one item but it occurs in various types of instances and as it occurs in one type of instance or in another it is said to be one or another kind of value. Whatever, however, is true of value *per se* is true of every instance of value i.e. the instance is an embodiment of the character inherent in the universal.

2. The most fundamental distinction in the field of values is that between intrinsic and derivative values. Intrinsic value is valuable in itself apart from its consequences; derivative value is, properly speaking, not value at all, any more than the reflection of a man in a mirror is the man himself. It is called a species of value, however, since it leads to intrinsic value. An item has derivative value in so far as it is a means to the realization of a value which is such in its own right. All values fall into either one of these classes but there is often considerable doubt as to which type characterizes any given instance of value. Although the distinction is comparatively clear common sense offers little enlightenment particularly in those instances where it is supposed to be most effective, namely, in practical situations. So-called practical men (and they generally exemplify common sense) are the most eminent blunderers in the field of values. Common sense in this realm, as in others, carries confusion to the extreme and a thinker who tries to bend and twist his theory of value to fit all its dicta is in a worse position than the mediævals who had to squeeze their metaphysics into the tortuous forms set by the dogmatics of the church. There is one reason, however, more important than others, why common sense is frequently in error in judgments about value and this is that humans are by the nature of their lives accustomed primarily to derivative values and consequently are inclined to see no value at all where there is no value as means. The mass of men are subject to the ironical destiny of perpetually toiling for values of which they are not aware.

3. It is to be noted that intrinsic and derivative values while distinct are not contradictory. That is, the presence of the one does not exclude the other. An item cannot both have and not have intrinsic value but it can have both intrinsic and derivative value and indeed most of the events in the life of an organism, that possess value, participate to greater or less extent in both. Even in drudgery there may be some intrinsic value although it seems as though there was none but derivative. Or, again, an activity ostensibly designed to attain an exterior end e.g. a battle, may have intrinsic value in that it involves a certain excitement and some have the notion that there is a sort of glory in it. Whether this excitement has value or not we shall pass by; suffice it here that it is sometimes supposed to have.

4. Values like other items are subject to the logical conditions of being and this means that particulars of any character are such in virtue of their participation in their respective universals. Values *per se* are universals and in the world of particulars there may (or may not) exist instances of them. The world of particulars is a world of events and their relations. Of the things that can participate, then, in value we have events, their relations, or events together with their relations, namely situations. There is no a priori way of determining what events, relations or situations can and what cannot participate in value. We select out certain types which we say do and others which we say do not, but if value is the sort of thing that is discovered, the most we can accurately say is that there are some events or situations in which we discover and others in which we do not discover value. As far as we know, however, any event or situation may be the participant in value. Again, whether all events or situations possess or may possess intrinsic value we cannot decide a priori and in an absolute sense we cannot decide at all. But the question as to whether all events or situations possess or may possess derivative value is less subject to doubt. For derivative, unlike intrinsic value, is dependent on the nature of the organism to which a thing is valuable: it is relative. A ship is valuable to man not because the ship is a ship but because men are men. If men were fishes the ship would have no derivative value. What can and what cannot have derivative value can be

more or less clearly determined for any class of organisms since that has derivative value which is employed for the attainment of the intrinsic value characteristic of that class of organisms.

5. This consideration of the items which can participate in value leads to the further classification of discovered and undiscovered value. Either intrinsic or derivative values may be undiscovered. The whole history of invention, in fact, is the history of the discovery of derivative value. The distinction of discovered from undiscovered values does not depend so much on the values themselves as on their relation to organisms, but in the case of derivative values this relation may enter into the essence of the value. There are some things which cannot serve as means unless the character in them, which permits their employment, is known and in that case the discovery of this character is essential to the value. This, however, is not a universal proposition. There are some items in some instances which serve as means, as the expression is, accidentally, without being discovered as such by the organism e.g. oxygen had derivative value before it was discovered to have this value.

6. The classification of values into intrinsic and derivative and these into discovered and undiscovered leads to a third division which is closely correlated to the character of values as discovered or undiscovered. This is the division into possible and actual. Possible values include all species of value in all possible worlds which contain value. A world which contains value is one in which the relation of better and worse exists. In a world which is devoid of such relation it cannot be said (1) that an actual thing is better or worse than any possible or conceivable thing, (2) that that world itself is better or worse than any other world. Only in a world containing value can a valuational comparison be made between itself and any other world. But all possible worlds possess some categories in common and it is questionable whether value is not one of these categories. That is, it is problematic whether if value can be predicated of one world it must not be predicated of all.

7. We have seen that the possible is an ontological, the actual an epistemological category (Essay on Actuality, pars. 1 and 10). The possible is *per se* dependent only on logical ante-

cedents. The actual is not opposed to the possible but is rather one species of it: that species, namely, which enters into the awareness relation. Where the relation of awareness connects two or more event-series those series are actual and in becoming actual they do not change essentially in themselves but enter a new relation. The becoming actual of an event-series is the passage of the awareness relation from event to event in the respective series. Instances of value come into actuality in the same way and hence actual values coincide with discovered values and undiscovered with the possible, which are not actual, values.

8. Either ends or means may be actual or possible. An item has intrinsic value when it participates in the value which is an end: derivative when it participates in value in the secondary sense that it is a means. The classification of ends is only possible in the case of actual values since the differences of undiscovered possible value cannot be known. Certain propositions, nevertheless, can be made about possible intrinsic values and one of these is that they are infinite in number. This is *a priori* possible since it is not contradictory and if it is possible it is. In one sense, however, it can be denied that there is an infinity of possible "ends-in-themselves." That is: there is only one true end-in-itself, namely, value and all other so-called ends are such merely because they participate immediately not derivatively in value. While there may be an infinity of qualities which participate immediately in value they are not, properly speaking, final ends but value itself is the one and only end to which all these subordinate ends conduce. This argument may be accepted as valid assuming that value is the one and only end. And we are obliged to say that if there is any such thing as value at all, it is the only end that has any value.

9. This brings up the problem of the relation between ends and value, and the relation between conduct, desire and ends. The concept of end is not necessarily a valuational concept. An organism may act towards an end and this end may not possess value. The ends which we observe humans to act towards in actuality may or may not possess value. An end in this sense is a state or condition to which an act or series of acts is said to be

directed. It is sometimes asserted, however, that the indispensable reason why organisms act with awareness towards an end is because they believe such ends to have value and in reality the value is the true end. This argument assumes that it is impossible for the organism to desire an end which has no value e.g. valueless pain. But this point of view is not conclusive. First, though it seems a little strange, there is no contradiction in the desire for an end detrimental, even with the knowledge that it is detrimental and hence such desire is logically possible; secondly the only sense in which it is impossible is a psychological sense. Psychology, however, tends to show that the behavior of man indicates the presence of desire for ends patently detrimental and that desires of this nature may arise independently of the awareness of the individual. In other words an organism may not know its own desires. Hence in actuality items are selected as ends regardless of their value but frequently value is attributed to them because they are selected as ends. It seems, however, to be true empirically that, for the most part, organisms do select ends in terms of the value conceived to be realized from them. Plato's doctrine that all men desire the good may be a sound psychological generalization: it is not a priori demonstrable nor logically necessary. A world is conceivable in which no man desires the good either for himself or others even though he might know the good. Such a world might seem psychologically incredible but it offers no logical difficulty. The only manner by which the proposition—all men desire the good—can be logically maintained is to define the good as that which is desired. But value (what Plato referred to as *τὸ ἀγαθόν*) as we have seen, is not definable as the desired (Logistic Prerequisites and the Definition of Value, par. 4). Were it so defined it would indeed be contradictory for value not to be desired but it would also follow that whatever was desired would be valuable and valuable in proportion as desired. It may be that there is something about value which makes it psychologically impossible not to desire it, but if so, this proposition is in need of some demonstration and is not self-evident.

10. Of values which are ends-in-themselves in our actual world an indefinite number of kinds and degrees may be indicated

according as the indicator desires to be more or less analytical. It is highly doubtful whether any two theorists of value would agree on a classification of intrinsic values or, having agreed on sub-species, would agree on the genera under which they were to be subsumed. There are, however, three consummate ends found in the realm of actual intrinsic values for humans which embrace other ends as subordinate elements and which in their scope encompass the whole realm of values. These are hedonic value, esthetic value, and intellectual value. Let us pass to a discussion of these kinds of value.

PLEASURE

1. The first real indication that a man wants to live a good life is an endeavor on his part to find out what the good life is. Such an endeavor is a turning to philosophy. Now no small part of the problem thus posited lies in an examination of the nature of pleasure. We shall be concerned, therefore, in this essay (1) with the distinction of the kinds of pleasure pertinent to our inquiry, (2) with the analysis of certain fundamental properties of pleasure and (3) with the determination from the nature of these properties, or the rôle which pleasure fills in the life of value.

2. We take it as axiomatic that the word *pleasure* has a content; that there is such an item as pleasure; that pleasure is a species of feeling and that every man is acquainted with pleasure if not by thinking about it at least by immediate awareness of particular instances of it.

3. Now we have already seen that no psychological category is identifiable with, or exhaustively includes, the nature of value. Therefore pleasure is not identifiable with value. Pleasure and value may be compresent; they are not the same. An instance of pleasure is not therefore *eo ipso* an instance of value. Instances of pleasure, moreover, may involve more or less value; they may be higher or lower, better or worse. It will be part of our purpose, therefore, to indicate under what conditions value is more, and under what conditions it is less present, in instances of pleasure. But if value is not identifiable with pleasure it is not, therefore, contradictory to and hence excluded from it. Pleasure is not in itself evil or valueless. No doctrine which considers pleasure *per se* as sin is, from this point of view, valid. There are two such doctrines: puritanism and asceticism. They renunciate it under the epithets: pleasures of the flesh, carnal pleasure, etc. All such doctrines in so far as they propose to have an intelligible basis are obliged to demonstrate that all instances of value are antithetic to all instances of pleasure and

vice versa. So far, such demonstrations have not been forthcoming and those that have been attempted have been based on very arbitrary and fanciful theological fiats. However, it is not our purpose here to give a critique of such doctrines which for the most part the wholesome appetites of psychologically healthy humans ignore even though the humans themselves do them lip service. There are few men who feel any genuine twinges of conscience because they are biological mortals.

4. We shall not here, to continue, give an exposition of the physiology and neurology of pleasure; we are primarily concerned with the relation of pleasure to value. A knowledge of the former subject, however, has something to do with the exposition of that relation and to the extent which it has we shall refer to it. Let us proceed at once then to an analysis of the kinds of pleasure.

5. Pleasures like other feelings are distinguished according to their quality, intensity, scope, duration, direction and consequences. The first three characteristics are inherent in the nature of a pleasure itself; the latter three i.e. duration, direction and consequence, depend on relations of the sentient organism to other things. The genera of pleasures distinguished by their quality we shall differentiate as: appetitive or emotional (or mixed); by their intensity as: mild, moderate or intense (these correspond for the most part to agreeable, gratifying or exciting pleasures); by their scope as: special or diffused e.g. the feeling of well-being as contrasted to a special pleasure such as taste; by their duration as: momentary, brief or prolonged; by their direction as egocentric or social i.e. pleasures involving, as conditions of their existence, merely bodily relations or also social relations; by their consequences as biological or deleterious.

By the term biological as here applied to pleasures we refer to two attributes of such pleasures: (1) their contributory effects to health (2) their evolutionary development in connection with the basic organic functioning of the organism. Biological pleasures e.g. those connected with eating, function as helps to the realization of the entelechy of the organism; deleterious as hindrances. Other distinctions differentiating pleasures can be

made; we employ these because they are pertinent to our treatment of the subject.

6. Now there are certain relationships between these classes of pleasure. We shall concern ourselves with those pertaining to appetitive and emotional pleasures. Let us consider the former first.

7. With respect to duration appetitive pleasures tend to be either momentary or brief although diffused pleasures such as those of physiological well-being may be prolonged. With respect to intensity they may be mild or moderate but are frequently, as momentary feelings, the most intense of all pleasures. With respect to scope they may be either special or diffused. They are for the most part both—involving a mergence of the hedonic feeling of a special sense e.g. taste, into a wider feeling tone. With respect to direction appetitive pleasures tend to be egocentric and unconcerned with other people—or if so only as means, or instruments, to their actualization. Humans who are predominantly concerned with their appetites are, as a rule, egoistically individualistic and absorbed with the satisfaction of their bodily desires. Their sympathy, such as it is, extends to others largely as they feel that these others have something in common with themselves, namely, similar appetites. With respect to their consequences appetitive pleasures may be either biologically advantageous or deleterious. They are, however, for the most part, in consonance with the self-regulatory character of the organism, biologically advantageous. In extremes or in aberrations this character may, of course, be reversed but in general appetitive pleasures correspond to physiological needs.

8. Having thus indicated their nature let us compare them to emotional pleasures. By emotional pleasures we mean pleasures connected with emotions such as, love, fascination, pride, hope, anger, admiration, etc.

9. Emotional pleasures occur in all degrees of intensity but approach less frequently to extremes. Their curve of variability is smoother and more gradual although at critical points it is not without abrupt and violent increases and decreases. They are of longer duration although the momentary is not excluded

from them. An emotional pleasure connected with love or admiration may last a life time. This is hardly true of any appetitive pleasure. Emotional pleasures again involve the whole organism and are not confined to particular senses although as we shall later see they also vary in quality. With regard to direction they may be egocentric or social but they are, generally, more dependent on social or, at least, on external relations than appetitive pleasures. Indeed since man is and has been a social animal for hundreds of thousands of years of his evolution there has, no doubt, been a selection out of more or less socially adapted emotional temperaments and the emotions serve, however imperfectly, to produce a self-sustaining and self-regulatory society much as the appetites, a self-regulatory individual. This means lastly that emotional pleasures may also be biologically advantageous or deleterious in their nature and since their variety is considerably greater than that of the appetites there is not an insignificant range of emotional satisfaction not altogether conducive to organic well-being.

10. Now we shall let these remarks suffice to indicate the distinction between appetitive and emotional pleasure. We shall consider in another place the nature and properties of the emotions. Hence from this point on when we speak of pleasure we shall refer primarily to appetitive pleasure and include only that type of emotional pleasure which is most closely connected with and akin to it.

11. Of the properties which apply to appetitive pleasure we shall examine seven which bear particular significance. These seven are as follows:

I. Appetitive pleasures are transitory. This requires no exposition. Appetitive pleasures cease with the satisfaction of the appetite.

II. They are numerous and dispersive i.e. they are incoherent. They divide and scatter the nervous energy of the organism. They arise and follow one another without order. Commanding, as they do, the attention and diverting it in many directions, they are distractive. The organism may or may not be aware of this distraction although when the latter heightens to the point of pain it provokes awareness. Such pleasures may and

frequently do set up conflicting desires which cancel their effect as pleasures.

III. They are non-cumulative. A past pleasure does not grow into a greater pleasure but vanishes. A new pleasure is practically independent of it in quantity, quality and intensity. The meal that a man eats in the evening may have desirable effects the next day; the pleasure of the meal vanishes with it. This non-cumulative character of pleasure may be called the sieve-property. By this we mean that the effort put into the satisfaction is only effective so long as the pleasure lasts. There is no construction. It is like pouring water into a sieve; after one stops pouring there is no greater quantity in it than when he began.

IV. It follows from the sieve-property that appetitive pleasures are non-prospective. They do not lead as pleasures to other pleasures or values. In a number of cases, on the other hand, they lead to pain e.g. excessive indulgence in any appetite. Strictly speaking, however, there is an intrinsic value in any pleasure, which is independent of subsequent pain and it is not the pleasure in itself which leads to the pain but the act which generates the pleasure. Again there is a certain charm—an aura of interest about old pleasures especially when they are connected with other people to whom we have been attached. Such pleasures of memory, however, although they could not exist were it not for the physiological satisfactions on which they are based, are emotional rather than appetitive. The memory, moreover, which contains them is, as a rule, recollective only of the pleasures and oblivious to the pains with which they were associated. This is, no doubt, one of the factors which lends a particular charm to them.

V. They are repetitive rather than progressive. This may be called the treadmill property. They do not advance to greater or different pleasures but repeat themselves endlessly. The organism that has experienced nothing else in its life has experienced only a repeated cycle of similar pleasures. It is, from the standpoint of value equally as well off at the end as at the beginning of its life. There is no progress, no variation, no appreciable widening of experiential horizon. There is only rotational uniformity.

VI. Appetitive pleasures are conditioned by many fortuitous circumstances. They do not lie within the control of the individual but depend on many things, internal and external, which lie quite beyond his control. Their cessation may occur at any time. The desire which they leave behind does not depart but continues even though its satisfaction is impossible. They are always more or less uncertain and render the individual dependent on them subject to the wheel of circumstance.

VII. They are subject to diminishing returns. At any given time the return of pleasure, after the optimum point is reached, for successive increments of effort, is less and less. There is a marginal pleasure just equal to the pain involved in the effort of its production. This margin is reached, in the case of many appetitive pleasures, with considerable rapidity e.g. it requires relatively little water at any given time to quench thirst. And so with a number of other appetitive pleasures. Yet if the margin is not reached an unsatisfied bodily desire is left behind which is itself a source in some degree of pain. Appetitive pleasures are scarcely ever pure but, for the most part, conjoined with antecedent and correlative pains.

The principle of diminishing returns, however, as it applies to pleasure is not without some mitigating features. It frequently happens that one pleasure while decreasing e.g. the pleasure of eating, is succeeded by another pleasure which increases e.g. the pleasure of bodily well-being. Thus the vanishing of a specific may be followed by the introduction of a diffused pleasure. This, it will be found, is true of most of the appetitive gratifications. There are two compensating factors for the operation of diminishing returns to hedonic values, namely, the succession of pleasures just referred to and the return after physiological i.e. metabolic change, to the same pleasures. Natural pleasures are cyclic.

12. Now before proceeding to a consideration of the meaning which these properties have with respect to the rôle which pleasure fills in a life of value it is, for the sake of clarity, necessary to make a further distinction. A pleasure, namely, is to be distinguished from a so-called pleasurable thing or act. The pleasure of an act is one thing the act itself is another.

Eating is one thing; the pleasure of eating is another. Hence there is not a strict coincidence of value between the pleasure which an act engenders and the act itself. The pleasure may be good the act may be bad. An act which produces pleasure is not necessarily a good act for that reason although the pleasure which it produces may have its own value. It follows on the other hand that an act possessing considerable value may be connected with little or no pleasure and lose none of its intrinsic value on that account. The distinction in short between pleasure and the event which produces the pleasure renders the two valuationally independent of one another, and the value of an act cannot be measured merely in terms of the pleasure it produces nor the value of a pleasure simply in terms of the act on which it depends. It should be noted here that what we have chosen to call biological pleasures do not differ from other pleasures in that they are pleasures but in that they are associated with acts or processes which are biologically advantageous. As pleasures, however, their biological characteristics lie not in themselves but in their external relations and although these do not, strictly speaking, affect their intrinsic values they augment considerably the derivative values which attach to them. Having now made these distinctions, however, let us turn to a consideration of the rôle which pleasure fills in the life of value.

13. From property I it follows that the presence and value of pleasure at one moment does not insure its presence and value at another. Immediately experienced values as such are ineffaceable but they have little reference to any moment except the one in which they exist. They are temporally discontinuous and a life confined to them is one of intermittent and disconnected value-instants.

14. From property II it follows that a life devoted to appetitive pleasures tends to be disintegrated, incoherent and filled with uncoordinated activities dispersed in many directions.

15. From property III i.e. the sieve-property, it follows that the value issuant from appetitive pleasures is independent of values at previous or subsequent moments. Thus while a life may contain much pleasure and value, in so far as value attaches to that pleasure, still the increments of value as the life pro-

gresses may, and in fact do, become successively less. The value in other words of successive moments diminishes as the moments advance. This is not true of cumulative values or values adherent to cumulative processes.

16. From properties III and IV in conjunction it follows that the actions of the life of appetitive pleasure are comparatively non-prospective. Their significance is momentary. As in the sieve example when the water is gone the results of the efforts are gone. So with pleasure (except for memory). When pleasures are gone, assuming they are exclusively appetitive in their nature, the results of the efforts put in on them are gone.

17. From property V i.e. the treadmill property, it follows that successive values in time are only a repetition of old values. There is no qualitative valuational progress but merely a periodic recrudescence of repetitive value. Such a life is rotational rather than advancing and since the rotation is prone to set up boredom the pleasure which it initially contains is subject to progressive extinction.

18. From property VI it follows that a life of appetitive pleasures is subject to impotence before uncontrolled circumstances. From the cognizance of such impotence comes a fear before all changes of events, not only those which do take place but a host of possible events which do not take place. Such fear—the feeling of weakness—the realization of the slipping away of the only things that the organism cherishes contains more lasting and abysmal pain than any pleasures derived from physical gratification.

19. Lastly from property VII it follows that for the great majority of pleasure-processes there is, after a given lapse of time, a successive diminishing of pleasure returns until the marginal pleasure is reached at which point no amount of effort, provided such is available, is effective in resuscitating the vanished pleasure. This is true, indeed, only for a life predominately appetitive in its nature such as few men actually lead but not a few fondly suppose to be singularly delectable. It is furthermore not without the mitigating factors which we have indicated. But these things notwithstanding, it is a life from which value once erased cannot be re-attained.

20. In conclusion, from all of these consequences, we take it to be evident that a life of appetitive pleasure is incoherent, dispersed, non-integrated; possessed of transitory values, together, however, with pains and dissatisfactions concomitant with unfulfilled appetites; valuationally repetitive rather than progressive; quantitatively non-cumulative; a life of diminishing returns and consequent dissatisfactions; non-prospective, desultory, impotent and in sum comparatively trivial. Pleasures, however, may be intense and owing to the hypnotizing effects of the intenser pleasures these attributes of such a life are frequently not discovered until the life is waning. The psychological result of the discovery is a feeling of extreme emptiness and futility.

21. In the foregoing we have not, in fact, been considering so much the life of value as the appetitive life and there are other considerations to be made about the pleasures of which we have been speaking. First, their value is not arbitrary and independent of external relations but is variable and varies according as they are associated with other values. Secondly, the objects to which they are attached or the processes from which they issue have, as we have seen, derivative values independent of the pleasures to which they give rise. To consider merely the intrinsic value inherent in the pleasure of such processes and ignore the derivative values (e.g. eating leads to health) which are dependent on them is to give a distorted and one-sided account of the value-meaning of the appetitive processes. Let us examine these considerations in order.

22. Value-processes are not independent of one another. Their separation or combination has a great deal to do with the value-content which they possess. Pleasure-values arise in a relational whole of events i.e. a situation, and the isolation of this or that special pleasure and its treatment apart from the whole in which it exists gives a specious and falsified result. The value-meaning of event-processes is not independent of the nexus of relations in which the processes exist. Hence the compresence of a number of processes may enhance their respective value-

contents materially out of proportion to their summation-values when they are considered as disconnected processes. There is a sort of chemistry of values such that the compresence of two or a number of processes involves greater value than the sums of the values when the processes are taken as separate. This is particularly true of the values attaching to appetitive pleasure-processes.

23. There are other organic functions which possess considerably greater value-content than the one we have referred to. Of these we have indicated two, namely, esthetic cognition and intellect. The question then arises: what is the relation between pleasure and these value-processes. By way of answer we may make the following observations:

24. The activity of the organism contains a ratio between value-bearing processes. As this ratio i.e. the ratio between more significant value-processes and pleasure, increases, the value of the pleasure increases. To say this with somewhat more definiteness but with a degree of oversimplification, the same quanta of pleasure have greater value in proportion as the relative quanta of pleasure decrease in terms of the relative quanta of the more significant value-processes which we have mentioned. It is clear that the absolute number of quanta of the values here concerned may be great or small. Their difference i.e. whether they are great or small, does not affect the relative proportions in which the values exist. As the ratio, however, of the more significant value processes to appetite increases the values of equal quanta of pleasure increase. As in the drought-rainfall relation (i.e. the less the rain the more valuable it is) the quantity of value for scarce pleasure units is high per unit although it may be relatively low in the aggregate value content of the whole situation.

25. There is, however, an optimum ratio which varies with individuals according to the capacities which they possess. Through this ratio they can best realize values and give to appetitive pleasure the maximum value which it can possess. This ratio is rapidly reached as appetite is indulged and the value of the pleasure of appetite declines whenever the pleasure-processes reach a proportion in which they supplant or interfere with

more fundamental value-producing processes. A considerable part of wisdom is the discovery, through intelligence, by any individual for himself (and others if possible) of the optimum ratio of pleasure and other value-bearing processes.

26. Let us turn now to an account of the derivative values arising from the processes which generate appetitive pleasures.

The appetitive pleasure-processes have fundamental derivative values which make them, even though they may be accorded restricted intrinsic value, significant as organic means. They are part of the biological and its complementary psychological purposiveness of organic functioning. In their natural or common and self-regulatory proportions they tend to physiological well-being. This is evident and requires no exposition. More fundamentally however (and more neglected by anti-naturalists), they are essential to emotional sanity. Emphasized disdain of the appetites is very apt to be itself an indication, intentional or unintentional, of the misuse of them at some point. A man who has not a healthy and wholesome range of physiological appetite is a prey to suppressions, aberrations and emotional conflicts. Since, moreover, he tends to project his unhealthy conflicts onto the lives of others by various means as instanced by anti-naturalistic and ascetic moralism, squeamish preciosities and specious religious dogma (e.g. arrogant emphasis on the sinful nature of physical pleasures) he is prone to become societally a nuisance.

27. The native appetites of the normal man, however, even when he falls intellectually a prey to the fanatic, find, in general, ways to express themselves. But often they cannot do so without flimsy and devious justifications which amount to little more than casuistry or undesirable self-deception. No man has any need to be ashamed of his appetites; rather the reverse, provided they are subsidiary to other value-processes. Appetitive pleasure under such circumstances is a refreshment and a lubricant to living; it gives immediate value to moments which must otherwise be barren; it sweetens existence and makes men humane, tolerant and emotionally understanding in a way that no moralizing and ascetic fanaticism ever can. The instant, how-

ever, that it becomes a chief occupation or a central end its value collapses and it changes humans into vegetative mechanisms enveloped in the mists of self-gratification and the titillation of the senses. Thus, in sum, while a life of appetite is trivial, a life devoid of the free enjoyment of pleasure is weakened, barren and sterile. It is a life devoid of play, laughter and relaxation and generally—irrespective of any external appearance of sanctity—a life which includes radical emotional aberrations, verging on fanaticism or paranoia. This means that the mixed life in which pleasure is present but subsidiary is the life of value. In the attainment of such a life two questions arise: (1) what proportion of the activities are to be given to pleasure. This question we have previously considered. (2) What kinds of pleasure are the most desirable for selection.

28. The second question is one which may call for an extended analysis of pleasures which we shall not give here. There is, however, a valuationally important distinction previously referred to that gives a clear indication of the nature of the answer. The distinction which we mean is that between biological and deleterious pleasure-processes. Those pleasures which are to be chosen, in short, and which are to be allowed to become habitual are biological pleasures i.e. pleasures involved in the normal physiological functioning of the body. Biological pleasures, in other words, are choiceworthy. What these pleasures are in all their detail may very probably be the subject of a dispute only to be resolved progressively by the science of physiology as it advances; what fundamental functions, whether for male or female, they involve, however, are well enough known, namely, the functions of nutrition, sex and general muscular exercise.

29. Now the life of appetite is not one which men can follow at will irrespective of circumstances. It is dependent on the external relations in which the individual finds himself. In particular, it is related to wealth. A human can recline into it with some facility when wealth leads to luxury and luxury to softness. But continued luxury produces a helpless and puerile character which not unjustly evokes the contempt of any independent man. It fastens all sorts of chains onto the body which

render the organism impotent, slavish and petulant. Where wealth is held in great possessions a man of intelligence lives a life not less physically hard than any other man (or of those who do so) and employs his wealth not for his private luxury but for the esthetic enhancement of the social environment or for the social values of science and education. He is not concerned particularly with the admiration of those who cannot see the vapidity in the mere possession, as such (i.e. without using it) of massive wealth.

30. To return, however, to the relation of pleasure and luxury to the life of value: appetitive pleasures are to be held (in so far as it lies within the psychological power of the organism) only with a readiness to give them up at once, as things of little moment, whenever the conditions of a life require such relinquishment. It is not easy to break up old habits; readjustment entails difficulty; but to a life whose striving is focussed on continuous and not on non-cumulative values and in which there is an antecedent knowledge of the nature of appetitive pleasure and hence, in which the expectation is prepared, the cessation of such pleasures does not concomitantly sublimate the fundamental interests which motivate the life nor leave it, when they pass, empty, futile and undirected.

THE VALUE OF PAIN

1. We have, in a previous essay, seen that value is not identifiable with any psychological category. It is ontological in its nature. The cognition of value, moreover, is a matter of immediate intuition. It can be indicated by inference; it can be experienced only by direct apprehension. Value is an ingredient in situations and any adequate awareness of situations comprehends a partial awareness of their included values. The relevance of these propositions to the discernment of the value of pain will constitute the subject matter of this essay.

2. Although it can be affirmed, on the one hand, that value is not identifiable with any psychological category it cannot, on the other, be asserted a priori that any given psychological category is, because of its essential character, excluded from participation in value. And this applies to the category of pain. We wish in this essay to maintain the thesis that in some pain there is some value and that the value connected with pain may be either intrinsic or derivative or both.

3. We tend to identify the sought-for with the valuable but it is a matter for demonstration and (though it has been often asserted) it has not yet been demonstrated that all that is sought for is valuable or that all things not sought for are, for that reason, not valuable. There is a very strong suspicion, moreover, that some things not sought for are nevertheless possessors of value. Since pleasure, however, is a thing which is commonly sought for and the value of pleasure, great or small, is immediately felt, value insensibly comes to be looked for in pleasure only. A closer examination, however, may reveal that value is tacitly recognized in other items. There are pains which we have had which we feel to be enrichening and contributory to the axiological meaning of existence. They hold this power intrinsically and apart from the good or bad consequences which flow from them. In saying this we do not say that the pains as such are pleasant, for such, while not absolutely contradictory, is not

proper to our meaning. The only contradictory of the pleasant is the not-pleasant and that all pains fall in the class of the not-pleasant we leave to the psychologists to determine. What we mean here, however, is that pain as pain i.e. as painful, irrespective of hedonic concomitants, may be a participant in value. There is in the suffering of pains an awakening to a range of experiences, physical and emotional which no other species of feeling can give. We feel that a human, if such were possible, who has missed all pain has missed also a considerable part of the psychological meaning of existence. We feel, furthermore, that a life spent in forced physical suffering has a meaning particularly deep, even though it may be one in which the activity of external accomplishment has been rendered impossible. In the exposition of these propositions let us proceed to a demarcation of the existential status of pain and to an analysis of its principal kinds.

4. Pains are events causally incorporated in the histories which constitute organic individuals. The awareness of them in time occurs as the histories which contain them are manifested in actuality. This awareness of them in time reveals that they fall into three, more or less, clearly defined classes. In each of these classes there may be (1) special pains e.g. local aches, or (2) diffused pains e.g. feelings of malaise.

5. The three classes to which we refer differentiate pain into physical, appetitive and emotional. Physical pains are immediate and positive sensations such as aches, pangs, throbs, burns, etc. Appetitive pains are dissatisfactions such as hunger and thirst. Emotional pains are forms of distress such as fear, anxiety, consternation or conflict of desires, care, despair and other painful emotions. Physical pains arise commonly from the stimulation of pain nerves through cutaneous sources but they may occur either through lesions or distortions in various parts of the body or from the over-stimulation of sensory nerves. Like pleasure they vary in intensity, duration and quality. They are, in accordance with the first, acute or dull; in accordance with the last gnawing, throbbing, burning, pricking, etc. Emotional and appetitive pains we shall consider in another place. Of the numerous sub-species of pains each falls into one or a mixture

of the above classes and, in fact, most pains are mixtures. We do not purpose in this essay to emphasize the differential valuational significance of the various species of pains. Each has, if not equal, considerable value-meaning. In the exposition of this meaning let us consider first the derivative and next the intrinsic value of pain.

6. Of the derivative values of pain there are two which are primary. One is predominantly biological the other psychological. The one is biological protectiveness and the other is enlightenment. Pain stimulates an organism, in a world of helps and hindrances, to protect itself. It is a means for preservation. The protectiveness of pain is, with respect to internal organic functioning, either symptomatic or inhibitory. Pains are symptoms of disorders and in many cases indicators of its locality. Their indication may be direct e.g. a toothache, or by reference e.g. a headache may indicate eye-strain. Pains, furthermore inhibit the use of deranged organs e.g. the pain of sprained ankle inhibits the use of the ankle until recovery. With respect to explicit organic functioning or behavior pain is also the occasion of protective activity. It produces aggressiveness as in the case of anger or evasion as in the case of fear. Aggressiveness or evasion in appropriate situations contribute to survival. Thus the biological use-value of pain is by no means insignificant. We have here suggested certain primary ways in which it operates. Any full account of the derivation or use-value of pain in this respect must be reserved for the biologist. It is possible to say, however, that the corroborative data for such a study, while not unopposed by negative instances, is voluminous and preponderant. Let us turn to an exposition of the enlightenment which is a derivative value of pain.

7. Since men do and do over again, according to their recrudescing desires, what experience has shown to be painful, learning by experience, which means, for the most part, learning by pain, while certainly active in conditioning humans to some types of behavior, is by no means as effective as is popularly supposed. There are some things, nevertheless, that we cannot know without pain. If they are not learned in one experience they are in succeeding ones. The knowledge thus arising we refer

to as the enlightenment of pain. For humans such enlightenment has two objects of reference: the self and others. This knowledge may not be, and seldom is, so far as it springs from pain alone, complete; it is often essential.

8. Pain is indispensable for self-knowledge. It produces primarily an acquaintance with pain-events themselves which is not an insignificant part of knowledge. Like other sensations these can be known only by immediate apprehension. But more specifically it shows a subject what the range of his emotions is, what he can endure, what he has to endure, what he can expect from future situations. It illuminates for him the characteristic nature of his own responses and permits him, to some extent, to know not only what he is but what he will be. In so doing it facilitates the estimation both of pleasure-bearing and non-pleasure-bearing circumstances. It renders pleasure more intense by contrast and is, so far as common pleasures are concerned, a correlative and concomitant.

9. Arising as it does out of maladjustment of some kind it stimulates humans, in a degree which pleasure seldom does, to thought. The thought may proceed to an enlightenment concerned not only with the individual himself but with the whole relational order in which he exists. Not all knowledge arises from the enlightenment of pain but there is little accomplishment of any kind, including the latter, in which pain does not play a rôle. Pain in one form or other produces the problems which an individual has to solve and it is in the solving of such problems that his life unfolds. This does not mean that all pain is a bridge to felicitous results; it means that in the attainment of all such results its efficacy is present. That this is a condition of every existential world we do not affirm; that it is a condition of this causal world requires little expatiation. An individual discovers what he is, what he feels and what he can do, to a predominate extent, under the impetus of pain.

10. Now since humans conform to the same essence and hence possess essential similarities, self-knowledge is never merely knowledge of self but also, to a greater or less degree, a knowledge of others. This applies to the self-knowledge arising from

pleasure as well as that of pain, but pleasure, at least appetitive pleasure, is careless of the emotions of others. Pain, however, if not while in progress, at least when passed, produces the capacity for wider insight into the emotional variations of other individuals. Suffering, among those who are not opaque in their sensitivity to the psychological conditions of others, engenders a kind of logic of the feelings, an intuitional empathy arising from a coincidence of the emotional experience of one individual with that of another, which yields a cognition more vivid and acute than that contained in conceptual reasoning about these matters. It establishes a parallelism of emotional differentiation, a communion, a tacit affectional rapport in which communication is present without word or overt sign. It renders the galvanometer of psychological intuition far more delicate and accurate in its indicating power than it could otherwise be. The degree of fineness thereby gained exceeds in its distinction the analytic descriptive power of language. Such understanding gives rise to an intelligence and a humanity not based on the arbitrary application of a plaque of external principles onto human situations, but on a psychological insight which permits its possessor to trace out and correlate in his own feelings the variations of those of another. Enlightenment of this nature is more valuable in human relations than any amount of moralism. It alone can rectify these relations, understand them and insert into them a geniality which is the finest mark of intelligence and civilization. It alone can see beyond the fence posts of conventional morality (which to a large extent is nothing other than a formulated and codified crystallization of primitive barbarism carried over into so-called civilization) and penetrate with its vision into a system of conative relations, active in the souls of men, more primordial and complex than anything approached by external fiat. It alone, in sum, can combine the intelligence of feeling with the intelligence of reason, which is the basis of significant love, and act, in particular situations, with an insight more penetrating than the A B C of current artificial standards. There is a host of difference between a man of insight and a man of righteousness; the one seeks for the introduction of value into human situations by understanding, the other by coercive submission to

absolute dogmas which are, for the most part, nothing other than violent prejudices arising partly from his obtuseness and partly from the pomposity of his own feeling of self-importance. It is practically always the dramatist who gets closer to the profounder ethical meanings in human situations than the moralist. The understanding requisite for such knowledge involves a kind of conscious or unconscious analytic microscopy of the emotions of others which produces insight if not agreement, perception if not concurrence. The acts of a man or a woman who has combined the suffering of pain with intelligence and obtained the enlightenment issuant from this union are marked by an intuitive accuracy and a psychological appropriateness which are quickly felt and recognized by others, but which are inimitable. They bear the marks of a higher art which can never be learned or attained by critical rules only, nor from reading books, nor from advice of others, but simply and solely from concrete personal experience.

11. The enlightenment of emotional intuition, moreover, which may be, and often is, developed through the experience of pain is connected frequently with a characteristic human condition which we shall call the Cassandra relation because it involves foresight without power. Some men can see about others what those others themselves cannot see. They see pain that is coming but at the same time understand their own powerlessness to avert it. They are themselves, in this way, subjected to no inconsiderable pain. It is left for them only to look on and realize that in the pain which is coming there will arise the enlightenment that will partly compensate for it. A life is a history of strivings; it is an emotional phenomenon. The crises of the emotional phenomenon are essential to it, to its meaning, and its enlightenment. There comes a time when an individual realizes that, irrespective of his care, his protection over others is, if not wholly, to a great extent apparent rather than real. Often the very measures of protection precipitate the difficulties to be avoided. In not a few instances the only real protection is the enlightenment of the pain itself and this will not come before the pain which engenders it. The flux of actuality slips out between the fingers of finite control; there is no individual who

can be wholly prevented from living out the causal experience which his nature demands.

12. Lastly we have to say that the enlightenment of pain is neither adequate nor complete. The foregoing propositions, by which we have endeavored to indicate the nature of this enlightenment, are neither universal nor apodictic. Whether or not pain produces enlightenment in this or that individual depends on many factors including the nature of the individual himself. Pain no doubt produces some enlightenment wherever it occurs but it may produce a balance of nonsense or superstition which outweighs any wisdom which comes from it. Of this the examples are legion; there is one, however, which is prerogative and which furnishes the basis for more miracle-working and solemn chicanery than most of the others combined. This is sickness together with its correlative process of healing. It is not necessary to give a historical resumé of the exploitation, religious and otherwise, for which this phenomenon has been made a vehicle. There are few things around which such a mass of absurdity and superstition has developed as sickness and the troubles of sickness are in one form or another troubles only because they are pains in one form or another. I.e. if pain is productive of some forms of enlightenment it must not be overlooked that it is also a pregnant source of superstition. To attain an enlightenment which is humanly adequate, capacities other than those for the suffering of pain are requisite.

13. In conclusion, nevertheless, we repeat that the derivative values of pain consist in its biological protectiveness and in the measure of psychological insight which it engenders. These are neither quantitatively unimportant nor qualitatively insignificant. Let us turn now, however, to a consideration of its intrinsic value. We wish, as we have said, to support the proposition that in some pain there is some intrinsic value.

14. Since judgments of value are not absolute there is no way to demonstrate with conclusive finality the presence of intrinsic value in this or that situation. If a human never felt that the pains he has experienced have any value he cannot be convinced of it by argument. It is thus more than commonly difficult

to support what seems to be a paradox with respect to such judgments. Pleasure, as we have said, is easily associated with value. Its valuational nature does not require emphasis. But there is also in some, perhaps all pain, an intrinsic worth valuable in itself and apart from its consequences. In some kinds of physical pain, in some dissatisfactions, in some instances of solicitude there is a realization that the life is richer because they were experienced, because they existed exactly as they did exist and occurred in precisely the relations in which they did occur. This realization refers, moreover, to the pains themselves and not to their consequences which, on the one hand, may be forgotten, or on the other, may never have been observed.

15. Some such recognition is perhaps present in the rites of primitive peoples. These have among other reasons for existence an educative purposiveness. In some of them the suffering of pain by the prospective members of the tribe is essential. Ulterior practical ends are, of course, attained by these rites but that their meaning is exhausted in such ends is not easily demonstrable. It is easy to attribute to races of other cultures the utilitarian motives taken as commonplace in the psychology of the occidental. If such utilitarianism exists, however, it is colored by different ends and different ways of evaluation. There is something peculiar, demonic and exotic, not comparable to notions common to peoples of European culture, in the attitude of the primitives toward pain. Though this attitude is vague, unformulated and inarticulate and arises from a complexity of motives not easily known it is not beyond probability that there is something in it, derived from the immediate experience of the tribal members, of a cognition of the intrinsic psychological meaning of pain. That such is the case we cannot assert, but we present it as a suggestion.

16. Perhaps the only way that such values can be indicated is to refer to the ostensible elements in the feeling and attitude which men, frequently without cognizance of it on their own part, hold towards value-bearing pains. There is a certain disdain for the life of the phlegmatic, unctuous and self-satisfied man. This is coupled with the feeling that his existence would be more significant if a few disturbances in the form of pain were

introduced into it. Such a feeling may be interpreted as animosity arising out of envy but in a more penetrating psychological analysis there seems to be other and more genuine understanding involved in it. Any profundity of character or temperament includes a knowledge of feeling and emotion which is born only of physical and emotional suffering. Such a trait is present in a personality as an immediately felt and irreducible element. The doctrine of perfection by suffering is an exaggeration but a personality which is to attain its widest range of value cannot do so without pain. It is to be said, by way of corollary, that much of pain lies in the pain which is the fear of pain. Not a small part of this fear is the fear of something that is good. In this respect it does not have to be pointed out that there are pleasures to be feared as well as pains.

17. The essential question of living is not how much pleasure an organism experiences, nor how much pain he undergoes, but how much value he attains. Value, as we have seen, although it may function as an attribute of, is not identical with, any psychological category. Men who are over-jealous of their happiness miss it. The more significant course to follow is that which is focused towards the attainment of values not dependent on self-directed pleasure-pain ends. Then the value which *can* be realized *will* be realized and both the pleasures and pains which arise incidentally on the way, will possess, according to the natural chemistry of values, their full valuational meaning. That men are not happy follows from the internal and external conditions of their lives. If common psychological happiness is one and the same with value then there are comparatively few lives which realize that end. But such an identity is, and always will be, problematic. There are value-bearing accomplishments far beyond psychological enjoyment. Lives of such accomplishments are valuable irrespective of the content of immediate psychological happiness applicable to the particular individuals who live them. But, further, if there is any intrinsic value to pain, which in some relations we maintain there is, i.e. in some pains there is some intrinsic value, then, assuming that pain and happiness are not compatible, a life does not realize its greatest value unless it contains some unhappiness. Then, in conclusion, while a

life without pleasure is barren, a life without pain is trivial and superficial. It is possible to say that the mixed life is best, but it should be added that it is mixed not only with pleasure and knowledge but also with pain.

18. It remains only to indicate the relation of this view to the enduring of pain. Although considerable pain can be avoided by knowledge, once instated, it cannot, unless its source is essentially imaginative, be reasoned away. The enduring of pain without expression of it perhaps has some value but it is a value which is not seldom exaggerated. Expression may give harmless relief. The essential value is not so much in the fortitude which suppresses expression as in the fortitude which is not deterred by the risk of pain where significant values are to be attained only by such risk. The one is more retrospective, the other is prospective, in its reference, and it is by prospective fortitude essentially that valuational attainment and hence self-realization is achieved. The demand for the inhibition of the expression of pain, unless that expression is manifestly excessive, is simply an unpsychological claim for the repression of natural and biological functioning. Whether a human weeps or is impassive under the pressure of pain is not the essential point; the point is, rather, whether or not he advances into the risk which is inherent in the accomplishment to be attained.

19. Lastly it is to be remarked that although the attitude held by the sufferer towards pain cannot obliterate the pain, it may nevertheless have some ameliorating effect on his emotional tone. It is not of minimal significance that a human in the toils of suffering understands, that, however poignant or perhaps agonizing his pain, it is not, in terms of value, an utterly meaningless thing.

ESTHETIC VALUES

1. If the word beauty is relinquished small value of terminological accuracy is derived therefrom since other words of less meaningful traditional content are required to express the category for which this word has a more or less valid denotative reference. If, however, the word has a meaning we are concerned with the question whether that meaning can be defined. If it can be defined, what is the definition and what properties of beauty follow from that definition? If it cannot be defined it is desirable to make this evident and to proceed to determine whether and to what degree it is subject to cognition.

2. Now some things are definable and knowable and of these some are definable and known, and some are definable and unknown. Some definable things, moreover, are defined and some are undefined and some defined things are knowable and of these some are known and, by some individuals, some are unknown. Again some things are indefinable and knowable and of these some are known and some are unknown, and, on the other hand, some things are both indefinable and unknowable so far as their essential characters are concerned. Nothing is in every respect unknowable. Now which of these classes includes the category of beauty it will be our object to discover. We shall first consider the possibility of defining beauty in psychological terms.

3. By a psychological interpretation of beauty we mean the interpretation of its nature: (1) as being a modification of a sentient subject i.e. as subjective, (2) as being constituted by feeling or a kind, or a property of feeling, or (3) as being the property of an object which is called beautiful because and only because it elicits certain emotional responses. The common character of these postulates is that beauty is either identical with, or dependent on, a feeling or a species of feeling of an observer. We propose to maintain the thesis that beauty cannot be given an adequate interpretation by the exclusive employment of these postulates. For this position we give the following reasons.

4. (I)* There is no logical or ontological necessity either a priori or empirical for defining the beautiful in terms of any special feeling or emotion. Let us take, for example, such feelings as love or admiration or diffused pleasure or *Einfühlung*. Not all love, nor love exclusively; nor all admiration, nor admiration exclusively; nor all pleasure, nor all *Einfühlung* are accepted as instances of the beautiful. Hence there are instances of love which are, and there are instances of love which are not, beautiful. The beauty, moreover, of different instances varies in different degrees. The same applies to the other emotions. There is, therefore, a distinction between esthetic love and non-esthetic love; esthetic *Einfühlung* and non-esthetic *Einfühlung* and so on for the other feelings. But if this is so then the question still remains: what precisely is the characteristic, the distinguishing mark, in an instance of emotion which constitutes its beauty since the essence of the beauty does not reside in the emotion itself. The problem is left, in other words, exactly where it was before the definition in terms of emotion was proposed since the distinguishing mark of beauty is seen to be not identical with any specific emotion itself.

5. (II) Owing to these exigencies a possible hypothesis is advanced that beauty differs from emotion or from any specific emotion but is nevertheless a quality of emotion. If, however, it is accepted that beauty is a quality of emotion and if beautiful things are beautiful because they evoke this emotion then there is no way of demonstrating that beauty may not be a quality of things other than emotions. In addition to this there are facts which seem to indicate that such is the case. It is quite as possible to consider a star, or a flower, or a painting as being beautiful in itself, as to consider an emotion as being beautiful in itself. It is, furthermore, by no means evident which emotions are precisely those which are the bearers of beauty. We conclude from these premises that beauty cannot be interpreted, except arbitrarily and without rational conclusiveness, either as a feeling itself or a quality of feelings, i.e. beauty cannot be interpreted as wholly subjective.

6. (III) There is thirdly the consideration that beauty is a

* See note, p. 328.

qualitative component in the relation of stimulus and response, existing in the relation owing either to the character of its terms or to its being projected into the object as stimulus on account of the feeling response evoked. Both of these hypotheses, however, include tacit assumptions which preclude an interpretation of beauty which is either essentially or exclusively psychological. In what such tacit assumptions consist let us proceed to examine.

7. We shall begin with the proposition that things are of variable beauty. The beauty of all things is, hence, not equal. Now the method available for empirical psychology in the attempt to determine the nature of beauty is to examine things in relation to feeling and discover whether there are any constant elements in things which invariably evoke those feelings which are postulated to be associated with beauty, namely, esthetic feelings. This method, in other words, proposes to discover (1) whether any qualitative elements in objects are invariably correlated with certain more or less clearly defined feelings (e.g. whether a color-contrast is always pleasing or always more pleasing than a color harmony) and (2) in case such a correlation exists, what the precise qualities in the objects are which participate in that correlation. Now there are two possibilities relative to such a correlation: either it exists or it does not exist. Let us assume first that it does not exist and then that it does, considering the consequences in each case. In case it does not exist then every ground for a psychological interpretation is removed since (1) beauty cannot be identified with any feeling *per se* or any quality of a feeling (by previous paragraphs) and (2) it cannot be identified with the correlation of any quality or set of qualities of objects with any feeling or set of feelings and hence no psychological generalization can embrace in its meaning the nature of beauty and beauty cannot be defined by an empirical law. Under such conditions the only valid universal propositions about beauty would be negative and these could not be fully verified; the only valid affirmative proposition that could be made about it would be particular and these could not be erected into an essential or a complete interpretation of beauty. The empirical psychologist in endeavoring to discover what the different kinds of likes, which men have, are,

and with what characters in things these likes are correlated is certainly cultivating a field of scientific investigation of considerable value, but the proposition that in so doing he is laying down an interpretation of the beautiful is erroneous.

8. Let us pass on, however, to the second possibility, namely, that a correlation between certain qualities of things and certain feelings, defined as esthetic, does exist, and consider its consequences for the psychological interpretation of beauty. We have said that objects are of various degrees of beauty. For the sake of expository clarity we shall say that some things are not beautiful at all and that other things are beautiful. Now it is, from the psychological point of view, postulated that the things that are beautiful are beautiful because they evoke certain feelings. But all things do not evoke these feelings. Therefore the things that do evoke such feelings do so because they have certain qualities. But if the feelings evoked are evoked because the things have certain qualities then the determining factors of the beauty in the relationship are the qualities of the thing and the thing is considered beautiful not because we have certain feelings about it but, on the contrary, we have certain feelings about it because it is beautiful. It may be objected that though we have certain feelings about a thing because it is beautiful still if we did not have those feelings it would not be beautiful and, therefore, they likewise are determinant and essential components of the beauty. But it is to be recalled that the present discussion originates with the hypothesis that there is an invariable causal correlation between the special qualities of beautiful things and the special feelings which are pertinent to beauty. Hence the qualities of the objects are causal factors in the presence of the feeling and it is not possible for the feelings to be present without the qualities i.e. we have the feelings because the qualities are present, and this being so, both the feelings of the perceiver and the beauty of the object are dependent on its qualities. Now if this is not so then the correlation we assumed is sublated and the case falls into that already discussed where there is not an invariable correlation between the relevant feelings and the special qualities. Hence the objection is irrelevant if the hypothesis of correlation, namely, the fundamental hypothesis of the psy-

chological interpretation, is granted. If there is a constant correlation between objective qualities called esthetic, and certain feelings called esthetic, then the supposition that the feelings can be present without the qualities is invalid and it would be impossible, *ex hypothesi*, for the object to be beautiful without the designated qualities. Now if such a correlation exists and is given a psychological interpretation i.e. an interpretation in terms of stimulus and response, it is scarcely necessary to demonstrate that the objective qualities are causes of the special feelings and that the feelings are not the causes of the qualities. If, for the sake of discussion, we suppose that all objects which have the quality of roundness evoke esthetic feeling and that no objects which do not have that quality evoke those feelings, it follows from our account of perception (Essay on Awareness, par. 15) that the roundness is a contributive cause of the feelings in the perceiver and not that the feelings in the perceiver are a cause of the roundness in the object. But, to resume, if the qualities essential to the beauty are the cause of the pertinent feelings in the perceiver, then the feelings are directed towards the object because the object is beautiful not vice versa. Since, however, the qualities of the object are not dependent on the feelings of the observer they can exist independently of those feelings i.e., the object can have these qualities whether it is perceived or not and hence it can be beautiful whether it is perceived or not. Hence, under the postulates of the present discussion, beauty is not a psychological category, which was the point to be demonstrated. We do not mean by this that the nature of the beautiful has no significance for the psychological processes of the individual. On the contrary that significance is great and we shall presently endeavor to indicate its nature. We mean that categories other than those found in psychology are necessary to give an adequate interpretation of the beautiful.

9. Now it is one thing to say that beauty is psychological and another to say that it is discoverable by psychological means. It is, however, clear that if it is not psychological in nature the methods of psychology, and in particular empirical psychology, are inadequate for its investigation. But that it cannot be reduced to a psychological category we have just indicated. There

are, moreover, supplementary and further reasons lying in the presuppositions of the science of psychology which render its methods impracticable in defining the beautiful. This science is, in the first place, subject to the general limitations of empirical science and in the second place it is subject to formidable special difficulties arising from the character of its data. The laws laid down by the science are reached by an inductive leap from particular instances and are, hence, on the one hand, tentative and on the other they are valid only in proportion as they cover a small or great proportion of the pertinent data. The available data, however, is such a small fragment of the field of pertinent facts that apodictic generalizations such as those of physics are practically excluded. These things may be indicated by the following considerations.

10. It is apparent from disputes about the beauty of particular objects that the view is generally held that judgments of beauty are subject to error. A perceiver may be mistaken about the beauty of an object. If, however, the beauty resides in a special feeling or in that feeling in relation to an object then no one can be in error about the quality of beauty in an observed object unless he can be mistaken about his own feelings. That men can be mistaken about their feelings, i.e. can mistake one emotion which they possess for another (e.g. envy for righteous indignation, or arrogance for a sense of duty etc.) is a matter of little doubt. But if men are mistaken about their esthetic feelings this vitiates the data derived from introspection as to what men have esthetic emotions about and what they do not. It vitiates, for example, verbal reports, because the verbal reports reflect the judgments of the subjects about items of which they are very susceptible to error. What method, however, if judgments of beauty are based on the presence of special feelings, can be devised to check the valid from the erroneous judgments? Since introspection is not sound can methods of objective measurement be employed? It is somewhat doubtful whether by the use of electric machines and mechanical devices the quality of an emotion can be detected. We might discover a physiological and infer an emotional disturbance from the measure of the blood pressure, the beat of the heart, the dilation of the pupils,

the quantity of adrenalin in the blood, the cessation of the flow of gastric juice in the stomach. We cannot unless perchance someone has found that esthetic response corresponds to a certain number of heart-beats or that it accompanies a particular tempo of respiration, infer from external physiological responses what the qualitative character of the feeling is which is postulated to be comprehended in those responses. In dealing with judgments of the emotions we are dealing with data which are, by their character, essentially private. Such are the difficulties arising in empirical esthetic investigation.

11. In addition to these exigencies, however, empirical psychology is infused with all the a priori assumptions about the nature of reality and the nature of cognition which the empirical method tacitly involves. It must predicate something about these categories before it can set itself up either as a method of any kind or, above all, a method of investigation. Unless it makes some a priori postulates about the nature of that which it proposes to investigate it can never distinguish whether it is, in truth, a method of investigation or not, since it would lack all criteria for such a distinction. Now if among the postulates of empirical psychology is one which affirms that beauty is a psychological category then the empirical investigator, in so far as he endeavors to demonstrate it, is concerned in demonstrating a proposition which he has already assumed in his demonstration. He finds what he wants because he has already assumed it in the search. If he does make this assumption, therefore, he cannot prove it empirically i.e. empirical psychology is, in fact, precluded on the one hand from assuming a priori that beauty is a psychological category and, on the other (for the reasons given in the previous paragraphs), from demonstrating it a posteriori by empirical methods themselves. Again if such judgments, e.g. that beauty is a psychological category, are accepted a priori then objections issuant from them which deny the independent existence of beauty in the object are themselves a priori and in this case arbitrary. That, however, no interpretation of beauty is adequate which does not account for the rôle of the existential qualities of external objects in the formation of judgments of beauty we have already indicated. And if such qualities do play

a rôle and if the feelings called esthetic depend on them whereas, as is evident, they do not depend on the feelings, then we have the right to affirm that the beauty of an object resides in its qualities, that the qualities of the object can and do exist apart from the perceiver, and hence the beauty of an object can exist apart from being perceived, and therefore, and lastly, beauty is not reducible to a psychological category but requires for its interpretation ontological considerations which evince its persistent character as beauty irrespective of the affectional responses of this or that finitely conditioned individual perceiver.

12. If we are to look for beauty, as we have seen, we must look for it in the qualities of things. But in examining things we cannot say that it is this or that quality, like red or solid or triangular i.e. some specific perceptual quality. A thing or object, however, is a relational regressus (*Essay on Relation*, par. 22) —a system of relations, and the beauty of the thing is comprehended in these relations. Beauty, therefore, is a relation of relations.

13. But since relations of relations are of various sorts and since they may be continuous with external relations the above proposition although it may be valid does not constitute an exclusive definition of beauty. It is necessary to distinguish the kind of relation of relations which comprehends that quality. We shall not, however, proceed immediately to the distinguishing of this concept but shall consider the proposition that, if beauty is a relation of relations, by an examination of the properties which pertain essentially to a relation of relations in general we shall also make an examination of some of the properties of beauty. Now in a relation of relations we have an interrelated complex of difference relations and where we have difference relations we have proportion together with a system of proportions. But where there is proportion there is the relation of equality and where there are equalities there are symmetries for symmetry is simply a relation of the terms of an equality. The greater the number of equalities the more numerous and complex are the symmetries. Where, however, there is symmetry

there is balance in the forms which possess them and if these forms are rendered fluent, i.e. temporal, by manifestation in awareness, there is grace in motion.

14. Again where there are proportions there are functions and variations but where there are variations there is repetition. The repetition is more or less complete as its elements are more or less similar. Now in any relation comprehending terms which are relations we have repetition of elements involving various degrees of likeness, but repetition of like elements is rhythm. Rhythms are of several kinds which we mention to indicate the relational differentiation possible in an instance of beauty. A rhythm is homogeneous when it involves a repetition of the same elements e.g. rotation or uniform wave motion; it is heterogeneous when it involves a repetition of similar but varying elements e.g. the series of natural numbers or the curve formed by the product of an exponential with a sine function; it is mixed when it involves a repetition of differentiated elements possessing collectively a dominant uniformity e.g. the common rhythms of music. A relational nexus possessing the character of beauty i.e. any relation of relations possesses one or more of these rhythms in some degree, but since any simple type of rhythm is merely selected out of a complex the nexus is more properly infused with an interweaving of homogeneous, heterogeneous, and mixed rhythms. Indeed since any repetition is a kind of rhythm, wherever there is a succession of differences there is a kind of rhythm. It goes without saying that a succession of absolute identities is impossible.

15. Now a relation of relations, as we have seen may be continuous with other relations and is not sufficient to mark off an individual. An individual, however, to possess qualities, whether we shall call them beauty or any other qualities, must be distinct from other things. By this we mean simply that if it is not distinct in this way it cannot be subject to the predication of qualities or, logically, it cannot be made the subject of any categorical proposition. An individual, whether a particular or universal, enters a system of internal and external difference relations which variegate its components and constitute a principle of individuation which delineate it, integrate it, and render it, as an indi-

vidual, distinct from other things. Thus whatever individual has a quality and in particular the quality of beauty has a nexus of internal difference relations which give it unity. In this unity, as we have seen, is embraced a system, i.e. a relation of relations, conditioning the presence of proportion, equality, symmetry, balance and inter-existent rhythms. The coördination, however, of internal relations articulated within an enveloping relation is harmony and wherever there is a true composite unity there is present in greater or lesser degree, according to the integration of the unity, the coalescing relation of harmony which consists in the compresence and coördination of compatible differences. All absolute disharmonies or discords are discontinuities which render impossible as a coördinated unity (i.e. as an individual) the system of relations which embraces them. If, to give one example, a single note stands out in a symphony (which name itself implies the existing together of its parts) isolated, irrelevant and non-mergeable with the rest, the unity of the piece is broken and it is heard as a bifurcated aggregate of unrelated fragments. Now a content of internal relations integrated into a unity by an embracing relation of harmony is a pattern and the pattern or configuration is the essential form of the unity thus established. Beauty, we have seen, is a relation of relations, but it is not such without qualification. It requires a principle of individuation to delimit a whole or wholes to which it can pertain as an inherent attribute. Such a principle is a system of relations which, through the character of internal harmony, constitute a formal pattern. Beauty, therefore, is a formal pattern of unifying relations delimiting an individual whole.

16. At this point we must retrace our steps a little and consider the meaning of the proposition that a unity of relations arising out of a relation of relations contains a system of proportions. Such a system of proportions (Essay on Number as a Category of Being, pars. 5 and 7) is an ontological number. We use the term ontological to indicate its character as an item of being as distinguished from notational number which is a matter of language,—connected with the former, however, by symbolical reference. Now any coalescence of numbers or any numbers constituting a form realizable, through the coördination of causal

series, in any existential world is a purposive unity, that is, in other words, an entelechy. From the nature of the universal—and entelechies are universals—it follows that all instances in all possible particular worlds exist (*Essay on the Universal and its Relations*, par. 3, V). But a formal pattern of unifying relations delimiting an individual whole is a universal. Hence beauty is a relation of relations transfusing an ontological system coördinated by a formal pattern existing in a purposive unity.

17. If, however, beauty involves these categories it also involves others which are conjoined with them. We have seen that a formal unity involving a relation of relations is a pattern or configuration. Any relation of relations, that is to say any situation, is in some degree a configuration and hence not only all compound universals but all particulars are embraced in configurations. Now value, either intrinsic or derivative, is a relational ingredient of situations. A situation or configuration of relations which participates in intrinsic value we shall call an exemplar. An exemplar though logically or ontologically dependent, exists valuationally in its own right since such existence or being is a property of intrinsic value. That, however, which exists in its own right because of its own intrinsic value is divine. By divinity we mean nothing else than the possession of intrinsic as distinguished from derivative value. It is the property of a god to contain the value of his being within himself. Whatever possesses intrinsic value is to that extent a god for it is an end in itself; that which possesses greater intrinsic value is more of a god than that which possesses less. The power of a god is the power of value; it rules not by coercion but by intrinsic worth. It is to be noted, furthermore, that a thing does not possess value because it is divine, but, on the contrary, it is divine because it participates in value. A thing which participates in derivative value only is not divine since it exists for the sake of another thing. But it contains within itself a kind of reflection of the divine since it takes on to some extent the value of the thing for which it exists. Thus, for example, the slaves who helped to build the Parthenon were significant, among other reasons, because they realized in their histories some of the value of the thing they helped to construct. There is, speaking symbolically,

from heaven to earth an unbroken chain of divinity; the intrinsic value of which that divinity is constituted is nothing other than beauty. When the essence of an item involves intrinsic value the item exists as an object of value in itself. A divine object is hence a relational configuration which involves intrinsic value in its essence and such an item, by the foregoing definition, is an exemplar. It follows, furthermore, that since intrinsic value sets up a series of transitive value relations which ramify through relevant particulars or situations in the form of derivative values, an exemplar is the center of a valuational whole. As such it is subject to the characteristics of a whole. But wholes, we have seen, are aggregates, organisms or personalities. An organism is a whole of differentiated parts coördinated into a system in which the parts are completely dependent on the whole. An organism, however, may participate in intrinsic value and hence be an exemplar. Now by a personality we mean an organism which is an exemplar i.e. a configurational unity of relations involving intrinsic value and thus, in addition, focusing on itself a nexus of transitive derivative values which are dependent on it. The concept of personality here defined is strictly non-psychological although psychological personalities are species of the genus personality. A flower has a personality, or the sun or a solar system. The primitives and men of the heroic age were perfectly right in attributing personality to places, trees, mountains, winds and stars for they did not distinguish psychological from other types of personality. Their recognition of the ubiquity of personality was valid. But personality is a matter of degree. Since, however, all personality is to some extent the vehicle of intrinsic value, all personalities are to some extent divine and exist, as valuational individuals, in their own right.

18. Now we have seen that beauty is independent of perception. A thing may be beautiful, whether it is perceived or not. A flower that blooms beneath the sea is beautiful. Thus although beauty *may* appear in perception it is inherent in any system of personalities in an existential world of real existents and is independent, for its being, of the perceptual, i.e. the actual, world. Actuality is the manifestation, through awareness, of non-temporal histories in a world of psychological space-time. The rela-

tional wholes in a world of real existents are independent of and are ontologically antecedent to such space-time. The tracery of configurations wherein the nature of the beautiful lies is non-temporal. The beautiful as an ontological category incorporate in the essence of reality is timeless. Beauty, moreover, in so far as it is incorporate in particulars is a timeless character of real existents. Although it is revealed successively in the fluent time of actuality it is never effaced even in its particularities, from being. Timelessness enters into the essence of the beautiful. A beautiful thing, in sum, is a personality in itself, possessing an intrinsic value which appears and disappears in awareness, but which, as an incorporate element in the implication of the independent, maintains its reality in a realm above that of time, and sheds its radiance, like a star, over a world of mutating appearances.

19. Now beauty, as we have seen, involves the form-composing unity of a relational whole making up a purposive or teleological individual. We have seen, furthermore, that such coördinated configurations constitute personalities which possess, in greater or less degree, intrinsic values. As these values increase they produce the valuational ultimacy according to which an object exists more and more in its own right and hence becomes more like a god i.e. divine. The source of divinity is the value resident in beauty. In considering this ultimacy of beauty as an attribute graven in the nature of being we come to a further interpretation of it. By beauty we mean simply the timeless coalescence of exemplary relational configurations into a unity which is at once a value-bearing entelechy i.e. which is the valuational center of a purposive system, and an ontological personality i.e. which is a whole rendered internally compatible by an enveloping and delimiting relation of rational harmony. Beauty is a differential property of items as they exist in being and not as they exist in appearance.

20. Now the realm of being, as we have elsewhere indicated, is a realm of meanings. We submit that beauty is a type of meaning in that realm and that any omission of the characters contained in the above interpretation produces a meaning not adequate to the concept of beauty, and that, on the other hand,

any signification more contracted or specific can only establish a specious precision at the expense of excluding relevant items. A more general meaning is a different, inadequate and diffused meaning; a more restricted meaning is obtained only by a fractioning of the concept into a plurality of meanings no number of which can include the valuational content required.

21. We make no endeavor here to define the indefinable. Value we have seen is indefinable; it is, nevertheless, in varying degrees known. We define beauty in terms of value as the metaphysical personality of a teleological whole involving intrinsic value. The latter we do not pretend to define any more than we endeavor to define equality or unity or redness. We add, moreover, that beauty is an ontological category; that a man can no more attain an insight into its meaning, although he may have esthetic experiences, without a thorough examination of the categories of difference, likeness and relation (the investigation of which is no small task) than he can read without knowing the alphabet. These categories are wrapped up in, and pervasive of its essence. This is evident when and only when it is clearly seen that we are talking about an ontological category. We repeat this last proposition because men have become so accustomed to distinguish the beautiful and the not-beautiful in terms of what they like and what they do not like that they insensibly fall into the attitude, in using the word. It is necessary to attain a different, more fundamental and more direct, concrete, rational realistic envisagement of ontological relations. It is necessary in order to understand the irreducibleness of any primary category of being to become utterly oblivious to the subject-object relation; to think just as if such a distinction never was made, for the distinction itself implies the tacit presupposition of the primary categories before it can be even rendered intelligible, not to mention set up as fundamental. To speak somewhat figuratively, in rational metaphysics a man must not look at the sky as something other than himself or himself as something other than the sky but must be totally unconcerned with any such personal otherness at all. Only in later investigation can such otherness be given a rational and non-contradictory meaning. We say these things because they are pertinent to the conception of

beauty, beauty conceived not as something for the pseudo-aestheticism of romantic enthusiasm (or at least as something in its own nature irrelevant to it) but as something far more simple and fundamental i.e. as a metaphysical character of items in being of the same ontological status, although more complex in its nature, as that pertaining to the relation of equality. The subject-object relation is not logically necessary to the meaning comprehended in the concept of equality; it is no more so in that comprehended in the category of beauty. If sentient beings were sublated the category of beauty would no more be sublated than the categories of number, difference or relation. It is very easy to say that these and other categories are simply ways of looking at things, but the fact remains that there has to be something to look at. And if that something is not subject to number, difference and relation before it is looked at it is not an insignificant question to ask: how can it be characterized as something?

22. Let us return, however, to the subject at hand. An interpretation to approach adequacy must not only manifest the nature of the thing with which it deals but indicate the consequences for the thing, which follow from that nature. Let us consider, therefore, the consequences with respect to beauty which follow from the interpretation which we have been concerned in presenting.

23. In the first place beauty and intrinsic value are com-present. When an item exists valuationally for its own sake its predominant value bearing character is beauty. Nothing possesses intrinsic value without being beautiful and conversely nothing possesses beauty without intrinsic value. The bearers of value are entelechial wholes and a whole involving intrinsic value participates *eo ipso* in beauty.

24. Secondly, it follows that beauty is an aspect of rationality. A beautiful thing is a personality and a personality is a whole. But wholes are meanings issuant from and involved in the implication of the independent and are hence rational. Wholes, moreover, are relational units and the formal character of the whole which constitutes its unity and in which the character of beauty resides is derived from the logical intelligibility

of the thing as a product of antecedent universals or meanings. Contradictory elements cannot inter-exist and hence a relational whole cannot contain a contradiction. There is, therefore, in the relations which make up a whole a consonance and agreement of members which, under the aspect of rationality, is coherence, and under the aspect of beauty, is harmony. That which appears to be contradictory is disjointed, broken and incomplete and offers no place for the vision to rest in order that it can be said: this is a thing. Thus logical coherence and esthetic unity coalesce in the formal structure of any real relational whole making it, on the one hand, intelligible and on the other, beautiful. Such a unity gives the object a finality of meaning, in itself, which individualizes and orientates it in an order of compresent meanings, from which it is differentiated, but with which it is continuous.

25. It should be noted that as a consequence of this relation between rationality and beauty there is no essential conflict between science and the esthetic attitude, if by the latter is meant the appreciation of beauty. The relational system within which a beautiful thing exists is not only consonant with the beauty of the thing, but is productive of the coherence and continuity, of the sublation of refractory contradiction, of the rational integration comprehended in the harmony of the thing as an indispensable element both of its being and of its beauty. Whatever differences there may be in the attitudes of men, owing to the diversity of their temperaments and hence interests, there is no conflict between science itself and the cognition of beauty. Science, indeed, as a revelation of relations hidden to the perceptual eye, is a process which lifts the curtain before unending macroscopic and microscopical vistas of existential design.

26. It follows thirdly from the ontological interpretation of the beautiful that the source of beauty and the source of rationality are identical, namely, the independent. Beauty is an aspect of rationality. But it also involves in its nature the coördination of relational nexa into purposive wholes. Now we have seen that the source of rationality is the independent and that the independent is likewise the consummate object of purposive redintegration. It follows that the independent is the source of beauty. Like the tropical sun which brings forth in luxuriant

abundance a limitless variegation of living forms it is the inexhaustible origin of the forms of beauty. It is the fountain of intelligibility from which issues by logical consecution meanings and configurations far beyond whatever exists in any existential world of particulars. There is a gradient of splendor which, embracing the harmonized forms which stand before the mind's eye, rises through a landscape of ascending entelechies to the confines of the rational source of all differentiating wholes; these, in turn, expand out in timeless relational integration into the intelligible structure of the realm of being itself. Through such forms, by a relation of transitive rationality, the category of beauty descends, passing into the infinity of individualized regressa which constitute the plurality of particulars in any existential world. This leads, however, to a further consequence.

27. Since whatever is, is involved in the implication of the independent (Essay on Dependence, Prop. XXXIV) and is hence rational and since beauty is an aspect of rationality, it is ubiquitous. There is no realm of being and no existential world and no particular relational whole which lacks it as a formal component. It is in some sense a characteristic of anything having a consistent and determinate form. Beauty, however, like purposiveness, of which it is a concomitant, is subject to degree. Its presence is a matter of more or less. It can be, hence, like greatness or smallness, an attribute having relative and comparative variations. The beauty of an item can be great relative to one thing and small relative to another. It follows that in spite of its ubiquity it is not equally present i.e. present in equal degree, in all things. As wholes descend from personalities to organisms and from organisms to aggregates, their relative independence is sublated, their unity fractured, and their individuality dispelled—the beauty which they possess evaporates, vanishes, and conceals itself in the amorphous incongruities of incoördinate appearance.

28. It follows, furthermore, that in its cognition, beauty is not engendered, as it were, out of nothing, nor is it fabricated in the psychology of the individual perceiver, but is discovered. It is found, not made. Beauty is an aspect of the configuration of relations which constitute a thing and is discovered just as

equality or circularity or symmetry are discovered. Since, however, it is an aspect of intelligibility it is an ontological category and is not confined to space-time forms; it pervades the whole realm of being and resides in any form of relational nexa. Beauty is a species of meaning; is discovered like other meaning is discovered, and whatever is, involves it as an element of its own meaning. It follows that the understanding of a thing involves the cognition of its beauty and without such cognition there can no more be understanding of it than there can be understanding of a triangle without a knowledge of the trigonometric functions which compose its being as a relational unity.

29. Such cognition is, moreover, subject to growth and enlargement. The peculiar beauty of an item previously unseen may be rendered progressively more evident. Just as one who knows how to derive the meaning from a book and reveal it to others who have read, but missed the meaning, so the beauty of an item may be progressively revealed to those originally not prepared to see it. Or in the same way that the qualities and merits of a human, latent at first, become evident as one acquires a deeper insight into his nature, so the cognition of the beauty in a thing may be, and to some extent always is, a matter of maturation and accomplishment. The beauty of the thing is there to be discovered, and if it were not there, it would not be discovered. The psychological effect of the discovery of beauty is a thing distinct from beauty itself. Beauty is not to be confounded with what is called esthetic feeling, much less with the *Schwärmerei* which is not uncommonly supposed to be a measure of esthetic sensitivity. The psychological effect of the discovery of beauty is a subject which we shall consider in a subsequent essay. It is necessary to remark here, however, that since intrinsic value is an essential element in the nature of beauty and since, as we have seen, apodictic judgments of value are not possible, it follows that apodictic judgments of beauty are not possible. Judgments of beauty, in short, are subject to the limitations adherent generally to judgments of value and the certainty which they contain is not that of irrefragable inference but of indemonstrable intuition.

30. It follows lastly, and as corollary to the previous propo-

sition, that judgments of beauty are subject to error. Since beauty may be discovered it may also be mis-discovered. It may be predicated of a thing in a manner in which that thing does not possess it. A proposition, in short, affirming or denying beauty of a thing may be erroneous. The fact that such propositions may be true or false produces the *raison d'être* for the whole field of criticism, for if they were all one or the other, criticism would either be superfluous or futile.

31. The kinds of primary error which may arise in judgments of beauty are three in number: they may be errors of presence, of degree, or of assignment. The first asserts the presence of beauty where it is not; the second asserts a degree of beauty, greater or less, which is unjustified by the thing; the third is an analytic error: it assigns the beauty of the thing to some factor or set of factors in the thing, which are either irrelevant to its beauty or at least not the exclusive bearers of it e.g. when a thing is called beautiful because it conforms to some a priori and arbitrary set of rules, or when it is called beautiful because of associations which something in it sets up in the perceiver. An example of the former occurs when a sonnet is called beautiful merely because it conforms to this or that system of versification or a piece of sculpture merely because it is asserted to have this or that type of symmetry. The sources of these errors we shall consider subsequently. The problem, however, of error in the judgment of beauty indicates both the presence of the non-beautiful and the necessity of distinguishing it. Let us turn to a consideration of this category.

32. In determining the nature of the non-beautiful it is necessary to indicate something which is not simply other than beauty but is incompatible with it; like inequality is with equality. The ugly or aversive does not fill this rôle since whatever species of quality the ugly, as commonly referred to, is, it is quite clear that because a relationship is not ugly it does not follow that it is beautiful or because it is not beautiful that it is ugly. Hence the ugly is not the true opposite of the beautiful. That there is such an opposite and what its nature is we shall proceed to consider.

33. Value, we have seen, is an attribute inherent in being, varying in the degree of its presence, and dividing out into two species the one of which is secondary and depends on the other and the other of which is primary and self-sustained. The former is derivative value and pertains to an item in so far as the item conduces to another thing which incorporates within its nature the latter, namely, intrinsic value. The presence or absence of intrinsic value thus conditions the presence or absence of derivative value and hence of any value at all. Now since the realm of existence is infinite and comprehends all possible particulars irrespective of their value-bearing significance, in that realm are included those things in which, if value is absent anywhere, it is absent or minimal. That, however, which is devoid of value, either intrinsic or derivative, is trivial and by triviality and the absence of value we mean one and the same thing. Value is a variable attribute. Its decrease is nothing other than the increase of triviality. There is no *tertium quid*. The absence of the one is the presence of the other. They are logical contradictories.

34. The realm of being comprehends an ordered nexus of value-bearing wholes which are entelechies. As particular things are orientated towards these entelechies they assume intrinsic values and as subordinate things are orientated towards these they assume derivative values. But as things are unrelated to, or disconnected from, that which has value they relinquish both value and beauty. Such items possess their existence in irrelevant scatteredness—dispersed, inchoate and fractured—and make up the trivial—more generally, that which has no bearing on anything else. The trivial may be defined as the breaking up of valuational wholes. It lacks relational unity, teleological coördination or rational significance with respect to other things, and wherever the trivial is, these characters are present. But the realm of being is an implicative order of universals and the realm of real existents an ordered series of mathematical worlds. In so far, then as the trivial has existence its locus is some other domain of particulars i.e. in a world where these things can appear fragmentarily and outside of the relations which integrate them, namely, in the space-time world of actuality i.e. of appearance. In such a realm the trivial may exist, for the things in it are

speciously disconnected from the system of implications which embrace them. The trivial consists in resting on and emphasizing the disconnectedness of actual, temporal objects—for if these objects are considered in the wider scope of their relations they are transmuted into significant members of enveloping entelechies and draw their meaning from items of value. Triviality is thus a category of appearance. It arises from the cognitional lacunæ, from the incoherence, of perception. It is a product of ignorance and a consequence of a manner of the cognition of things. The trivial, the non-beautiful, is thus a product of time, existing and being regenerated in an existential world which is inadequately envisaged.

35. An actual world, however, is a social product (Essay on Actuality, par. 22) evoked, in a large measure, by a culture. The elimination of the trivial is thus, if it occurs, a social process and the included processes of art, science and philosophy are those which are principally concerned with the illumination of the valuational meanings of things and the revelation of their incorporation in an order which sublates their triviality. They are concerned in transmuting a world of fleeting actuality into a world of signification and meaning. They are, in other words, concerned with the discovery of the ontological meaning of the category of beauty. This, however, is both an anticipation and a digression.

36. We have seen that intrinsic value is a component in the essence of the beautiful and that nothing which lacks intrinsic value is beautiful and that nothing which is beautiful is devoid of self-sustaining value. It follows that nothing which is beautiful is trivial and nothing which is trivial is beautiful; that, in short, the true opposite of the beautiful is the trivial. Hence errors in judgments of beauty, where those errors are concerned with the predication of the presence or absence of that quality, consist in the substitution of the trivial for the beautiful or the beautiful for the trivial. Out of such errors comes the galaxy of trivialities which popularly and falsely under the names of art and beauty fill up the hasty mechanical civilizations of modernity—mushroom growths in which value, which can only be attained by profound and maturing culti-

vation in the beautiful, declines into triviality. The trivial in art takes the form of the piquant and the affective. The errors which are concerned generally and societally with the undue valuational emphasis placed on the trivial have certain determinate characters which we may turn to and examine. They assume two primary forms.

37. First they consist simply in an obtuseness to attributes of value which springs, for the most part, either (1) from the blinding influence of personal ambition coupled with the desire instilled into the souls of men by the mass suggestion which makes them insensitive to non-personal values, or (2) from plain, engrossing hedonic concern with pleasure, and this has the same effect. Both of these processes engross the attention and render the rest of existence an irrelevant adjunct valuationally colorless and neutral. They produce, in short, the most imperious and irrefutable of all human attitudes, namely, that of the philistine.

38. These processes, moreover, conduce to the conditions which bring about a second and equally dominant form of the error. They promote the erection of derivative over intrinsic values. Since men are, for the most part, engaged in the pursuit of derivative values—since most men are engaged by dire necessity in such pursuit—the secondary meaning of these values becomes clouded in their thinking and by habit they insensibly come to regard them as ultimate. They become oblivious to the value of anything except in so far as that thing is connected by a relation of use to the immediate activities with which they are familiar. Now since derivative value when set up as an end neither has value in itself nor leads to other value this error which subordinates intrinsic to derivative value is a dominant instance of triviality. It is one species of the sublation of value altogether. The fallacy of the exaltation of derivative over intrinsic value, the commonest error in valuation which is made, we shall call the fallacy of inverted valuation. It is the fallacy of the instrumental: the instrument, the means, which loses its meaning, even as an instrument, when it sets itself up as an end. It follows that a society which produces a culture that emphasizes derivative over intrinsic values becomes ephemeral in its

valuational meaning and produces a trivial culture. It is not to be overlooked in this criticism of the fallacy of inverted values that intrinsic and derivative values are in rare cases only wholly separated in actuality and are, in greater or less proportions, compresent in the same events. Their compresence, however, is not their identity and the loss of sight of this distinction readily effects a confusion of the dependent and the reflected in value, with the timeless and the essential and in so doing subverts any intentional fixation of the strivings of men on the objects of intrinsic worth and conduces to the introduction of a romantic chaos of glittering trivialities. The nature of the beautiful is something to which a culture attains only after some centuries in the recognition of its meaning.

39. Beauty is a universal which is capable of an inexhaustible wealth of instances. And each one of these instances is the bearer of an intrinsic value which is a reflection, in varying degree, of the value of its source. The beautiful is a temple whose inmost sanctuary is never reached. The cultivation of beauty can be made profounder and profounder and with each advance there is a more than proportionate increase in value. Rather than approaching an end, the vistas opened carry with them premonitions and suggestions of undiscovered realms of value far beyond those attained. Now the cultivation of the beautiful, otherwise than popularly supposed, does not move toward the ornamental, the superfluous, the trivial in short, but towards coherent value and hard-won insight. There is nothing soft about it and nothing unexacting. There is little more foreign to the attainment of beauty than the pandering estheticism of the decadents. It is true that the extreme sensitivity to form necessary for a cognition of the beautiful, when unaccompanied by the intelligence of insight and the power of distinction, overflows into a multitude of trivialities which in the fields of literature and art are passed off as creative works and account for much of the silliness in the attitude of the general public towards those processes. But the human meaning of the process of art which brings forth the beautiful is to be seen rather in the steady devotion to the attainment of a rational vision seen in the life of a Plato, in the demand for esthetic perfection coupled with the unswerving intel-

lectual discipline of a Dante, or in the concentration of genius directed to the perfected realization of a conceptual form required by the architects who built the Parthenon. If there is anything decadent or soft about these things it remains for some one else to discover it.

40. The attainment of the beautiful and the life of appetitive pleasure are two different things. Since the cultivation of the beautiful leads to increased intrinsic value it differs from that of pleasure which as we have seen leads only to diminishing returns. Pleasure taken as an end in itself begins with the trivial and ends with the trivial. This, however, invites a comparison between the significance of pleasure as an end and beauty as an end. The comparison amounts to a contrast.

41. Beauty, as we have seen, leads to wholes which involve intrinsic value. It is concerned with finding one form in many things and finding this form again in higher things. It is thus integrative and teleological. It concentrates and intensifies the activities of its devotees and these, conflowing and advancing, produce a fountain which throws forth ever more valuable concretions of the beautiful. Pleasure is, on the other hand, as we have seen, chaotic, variegated, dispersive and disintegrated. The seeker after sensations is the prey of every distractive and conflicting stimulus. There is no wholeness and no harmony in his existence.

42. Secondly, the cultivation of the beautiful brings with it cumulative value since successive attainments increase the store of intrinsic value already attained. This is not the case with pleasure. Pleasure is non-cumulative. It is valuationally stationary. Except for persistent elements in memory, pleasure vanishes with its own accomplishment.

43. Lastly, beauty as an end conditions qualitative progression. The cultivation of the beautiful not only proceeds to the greater incorporation of value but to ascending kinds of beauty. In the widening of vision different wholes and configurations, different meanings emerge and the eye of the searcher goes on to other and more inclusive forms. Pleasure, however, is repetitive. It involves the recurrence of the same forms over and over again; not without value, but with diminishing returns. Pleasure

is rotational; the cultivation of the beautiful is augmentative. Now owing to this progressive nature of beauty, to its incorporation in ascending entelechies, to its intensification in more inclusive unities, the intelligence which discerns it, is led through the dominion of beauty in particular things, through the generations of nature and works of art, to the beauty of relational configurations in other space-time worlds and beyond to the intelligible beauty in the synthesis of rational forms which rise in synoptic integration to the unifying source both of rationality and of being itself. In this ascent occurs a developing appreciation of the beautiful seen as a pervasive category of being and hence, with this, a clarified awareness of the ultimate coalescence i.e. the unity, of metaphysical insight and esthetic intuition.

APPRECIATION

1. Appreciation is the cognition of value. General appreciation is appreciation pertaining to the cognition of any value. Particular appreciation is that pertaining to a particular species of value. In this essay we are concerned with the particular kind of appreciation proper to the beautiful. The appreciation of beauty we shall call discernment. The psychological effect of discernment we shall call attitude. A study of discernment requires an examination of its nature, the conditions of its existence, the consequences which follow from it and which, finally, contribute to determine the attitude of the perceiving subject.

2. In the discernment of beauty two species of discovery are necessary: first, the discovery of the item which is beautiful and secondly the discovery of the beauty in that item. We propose to show, during the course of this essay, that these two species of discovery coalesce into one. Before entering upon this discussion, however, we shall take up a subject preliminary and propædæutic to our study, namely, the pathetic fallacy.

3. By the pathetic fallacy we mean the fallacy which confuses pathos, passion or emotional response with esthetic discernment. The cognition or seeing of an item is one thing and the feeling response to that item is another and although the two may be concomitant they are not identical. The former i.e. the discernment, is a cognitive relation between the object, whatever it may be, and the observer; the latter is an affectional process involving a causal series which relates the internal states of the organism i.e. the emotions, to the object. The emotions are not like the object and may exist independently of its presence. But discernment is a relation only present when both object and observer are present. It is to be noted, furthermore, that objects as real existents are non-temporal and hence that which is actually perceived, either by memory or sense perception, *is*. But real existents are also present and causally efficacious whether they are cognized or not (Essay on Existence, par. 9,

Essay on Causation, par. 7). And the events constituting the emotions of an organism are causally related to external events determining the conditions of existence of that organism. It follows that we may and do have responses to objects or to elements of objects which are not discerned, just as we respond to ultra-violet rays or to slight changes of temperature without being aware of them. Indeed the causes of our emotional responses far surpass the scope of awareness. From this again it follows that emotional response is not a necessary concomitant nor an apodictic indicator of discernment—and that various sorts of emotional response may arise without, at the same time, being accompanied either by partial or complete discernment. It does not follow conversely, however, that the presence of discernment is neutral with respect to emotional response. The point ascertained is that the absence of discernment does not involve the absence of emotional response. Beauty we have seen is a particular kind of personality i.e. a value-bearing configuration woven into the relational texture of a thing. And beauty i.e. the beauty discerned, is in things and not in organisms as perceivers. It follows that the emotional response to a beautiful object is not unfailing evidence of the discernment of the beauty in that object, or, in other words, the fact that one is fervid about a thing does not mean that he discerns its beauty. From the proposition that the discernment of beauty may be accompanied by a certain emotional attitude it does not follow that, from the presence of an emotional attitude, it is valid to infer the presence of discernment. It is rather true that antecedent emotionalism tends to obfuscate discernment. It is a considerable source of error in esthetic judgment. Beauty exists whether people become fervid about it or not and all the fervidness in the world does not make a thing any more or less beautiful than it actually is. Those who in the presence of music, poetry or painting give themselves over to gushing panegyrics or to acrid invectives represent a type which is notoriously erroneous in the cognition of value and evince themselves on the whole to be deficient in esthetic discernment. Many are naïvely imbued with the notion that the vehemence of their affections is one with the fineness of their insight and that their appreciation is to be measured

by the rise and fall of their visceral responses. But such a correlation, fortunately or unfortunately as the case may be, does not exist. It is, furthermore, owing to the obfuscating effect of antecedent emotionalism on discernment that men are in general bad or mediocre critics of the works which issue from their own hands. Such works carry, as a rule, for the individual or group which produced them, a heavy charge of self-directed emotions. From these propositions, then, we conclude that appreciation is essentially a matter of insight and not of affective response and we shall go on to examine the nature of such insight or discernment.

4. By discernment we mean the cognition of the relations in a whole which constitute its personality i.e. its beauty. Perhaps the simplest example of discernment is the cognition of the relations in a common proportion of the form $a:b::c:d$. Proportions, however, can become extremely intricate and the power of discernment is the ability to trace them down through successive series which become progressively more ramified and exquisite—or, on the other hand, to trace them to wider and richer wholes which enlarge to include integral worlds of articulated relations.

5. In things, as we have seen, there is no end of relations. But these relations are not discontinuous. There is no relation separate, isolated and outside of an intelligible nexus of relations. Hence there is no relation not accessible to a discernment which can traverse the concatenation of relational nexa on which it depends and out of which it grows, and, therefore, the limits of discernment lie in the nature of the discerning organism and not in the nature of things. The metaphysical possibility of discovery is infinite and it is only through the psychological limitation of the finite knower that discernment can reach a term.

6. Discernment moves from the known to the unknown, from the exterior to the interior, and it reveals successive interiors until the regressus of the particular is followed down to the temporary limit of cognitional vision. In this process successively intricate likenesses and differences are discovered until progressive orders of relational wholes stand out before the dis-

cerning eye. These wholes comprehend all species of differences. They comprehend differences of quality, quantity, degree and intensity and the farther the discernment penetrates the more manifest becomes the variegation as well as the integration of these differences. Thus the symmetries, the rhythms, the harmonies, the unities and the esthetic meanings of things advance and appear over the threshold of vision and become evident to the intuition as relational components in the wholes which it reveals. Thus it is, that the mists of suffused emotionalism are lifted before the eye of discernment and it beholds a reticulum of differentiated relations extending on to the unending depths of the infinitesimal.

7. Now there are three primary characters which pertain to discernment and which hence merit consideration. These are: clarity, acuteness and completeness. Let us examine them in order.

8. Clarity is an essential for discernment since its absence entails the confusing of likenesses and differences and the distortion of wholes. Beauty as we have seen is a type of meaning inherent in the relational system of a thing and it is only discovered with the discovery of that system. Lack of clarity in discernment, however, yields only a partial and refracted image of that meaning. Thus as a bad Greek scholar who in interpreting a sentence confuses his subject and object, his cases and modifiers and neglects the moods of his verbs, may, although he does not get the genuine meaning which the sentence possesses, get some kind of a meaning out of it—so the lack of clarity in relational discernment, although it may yield an inadequate meaning, manifests the beauty of the whole only obscurely and as if through a fog. Until relational nexa are discerned with clarity neither themselves nor their properties are in a genuine sense discerned. If, however, they *are* discerned with clarity the perceiving subject is led on to the environment of relations to which they point and in which they exist.

9. The advance to the discernment of finer relations, both internal and external, pertaining to a whole, is acuteness. Acuteness is subject to degree but it has no limits, since relational series are infinite. Every existential whole is an unending re-

gression of converging relations and hence precision of discrimination in discernment cannot be exhausted nor brought to an absolute limit. Acuteness of discernment reveals the mosaic of relations which make up a contemplated object. Absence of acuteness leads to oversimplification, and, in case the detail is essential, to loss of essential meaning. It constitutes a kind of effacement of difference relations, which, existing in the thing, enter into the meaning wherein its beauty resides. Since, in other words, the internal differentiation and articulation of an item determines the nature of its personality as an organic whole, the oversight of such difference relations constitutes a considerable lacuna in the discernment of its esthetic meaning. Acuteness is essential to adequate discernment. It is a capacity which, except in some rare mortals, requires for its realization considerable cultivation. It is not necessary to say that the Greeks, although they excelled in the other qualities of appreciation, were preëminent in this one. In that preëminence—in the intuitional certainty with which they penetrated to the meaning of finer relations and more subtle degrees of difference without losing the rational coherence of the whole of that with which they were concerned, lies one of the profounder elements of their extraordinary genius.

10. Emphasis, however, on the character of acuteness to the neglect of the other attributes of discernment leads to dispersion and preciosity. An integral unity is broken into irrelevant fragments which often descend to the trivial. There may be a nicety of distinction without the recognition of the globular significance of the distinction. Acuteness of discernment alone may amount to nothing more than a digression into prettiness. Acuteness requires for its effectiveness a supplement. The nature of this supplement we shall presently consider.

11. Now we have seen that beauty is an element in the meaning of a thing and that the cognition of it is a matter of discovery. Its discovery, however, involves the discovery of the thing and its meaning. This leads us to the consideration of the relation between discernment and understanding. By understanding we mean the cognition of the intelligible meaning of a thing incorporate in its status in the implication of the independent.

Since beauty is a meaning within the relational whole constituting the thing, that whole has to be discovered in order that the beauty of the thing may become evident. In other words the understanding of a thing involves a discovery of its beauty for without such discovery an element in the meaning of the thing is neglected, and conversely the discovery of the beauty native to a thing involves the discovery of the thing and its internal and external relations. We have to see a thing before we can see its beauty; this is essential; it is the ineluctable postulate of all appreciation. And we cannot fully see its beauty until we have fully seen the thing. We have indicated, furthermore, that beauty and intelligibility are compresent. The meaning of a thing wherein its beauty resides is part of the intelligible meaning which gives the thing its specific character. It follows that the discernment of beauty in a thing involves an understanding, a cognition of the intelligibility of the thing, and that understanding and discernment become identical. Any cognition of the object which does not reveal its beauty i.e. its personality, is inadequate and any discernment of beauty which neglects the whole nature of the thing is specious and partial. Understanding, to repeat, involves discernment and discernment involves understanding. We cannot see the beauty of a thing until we see the thing i.e. until we see the thing in its reality and its intelligibility, and if the thing is thus seen its beauty must become evident because it is a character of that intelligibility. The way to make men see beauty is to make them see things in the wholeness of their relations. It is obvious that a man will not and cannot see the beauty in that which he does not see at all. On the other hand it is sometimes said that a man understands a thing but does not see the beauty in it. From the present point of view this is contradictory and hence impossible, for the discernment of the beauty in an object is an essential part of the understanding of the object. This means, for example, that an astronomer can know something about the moon and likewise an artist can know something about that satellite, but neither can understand it nor discern its meaning until the astronomer apprehends its beauty and the artist its astronomy—the intelligible nature of the moon embraces all aspects of it. Discernment without understanding

is fictitious. Many artists are so limited in their intellectual grasp that they have no suggestion of the beauty which they do not see and according to the general principle of human judgments they assume that where they cannot see value there is none. The fallacy, however, of such judgments needs no exposition.

12. At this point let us make a slight digression on the human significance of discernment or appreciation. Appreciation is a relation entered into by an individual organism. As the appreciation of the organism develops the organism becomes more sensitive to the esthetic meaning of its environment and the demand arises for the incorporation of beauty into that environment. The individual, however, is relatively ineffective in establishing environmental modifications. An individual who by endowment and training has attained a considerable level of appreciation is a center from which the meaning of appreciation spreads to others. It is to be noted that an organism which attains an appreciation of value itself gains value on this account. There is a profound social meaning to this truth. Progress in value, social or individual, requires before other things the appreciation of value or of beauty and he who attains this for himself is performing the first necessary step in the attainment of it for others. With the spread of appreciation the social attitude is affected and the possibility is established of modifying the environment for the realization of the profounder values of beauty. The discernment necessary for such a change, however, does not come out of the ephemeral and specious perturbations of sporadic enthusiasms but through training and intelligence. It is a process which accompanies the whole cultural rise of a social group and it extends through generations. The artist leads the community in which he exists and the level of appreciation of the community determines the artist. There is a reciprocal reaction which operates back and forth to raise, progressively, the social level of appreciation. The limits of the progression are only fixed by the native power of the group to discern. In a social group containing individuals whose imaginations are restricted and whose powers of discernment feeble, the activity of the community is turned over, for the most part, to derivative values

and physiological pleasures and the attainment of the societal meaning of beauty is practically precluded. But the culture of a community is never stationary. Regardless of how slow the change, an internal mutation is always in progress. A culture (depending on those who make it) can descend to the dead level of instrumentalism, or, again, to the vapidty and weakness of luxurious trivialities, sliding down the hill of multiplied comforts to complacent stagnation—or it can attain by discipline and insight the intrinsic values of the beautiful. The bringing forth, the generation, of the societal appreciation of this value is one of the few essentially significant processes occurring within a group. No group, it is to be added, and no culture has ever declined because it has attained this value; it has retrogressed for precisely contrary reasons, namely, from the ineptness and purposelessness of short-sighted practicality or from the neglect of the value of beauty, on the one hand, and the propagation of the incoherent and the trivial on the other. It has gone down because its powers were broken, dispersed and set against one another—because they resolved themselves into the intense strivings of private individuals, conflicting as private and isolated units, for items the possession of which must be essentially private. As we have seen, however, the erection of beauty as an end brings with it the integration and cultivation of all the powers of the organism for the progressive realization of imminent values. Any culture which is dominated by a striving for a genuine value is a developing culture and it is only when its ends become scattered and its appreciation of value—and, to a large extent, of beauty—becomes darkened, that it flattens out into a sterile desert of inconsequentiality and meaninglessness.

13. There is no invariable rule or set of rules by which the stone of appearance can be lifted from a thing to show its beauty. Clarity and acuteness of discernment are both essential. They must, however, be supplemented by another character of cognition which reveals the relations of a contemplated item as they are conjoined together to form a significant whole. The character to which we refer is completeness. Completeness of

envisagement is a third essential property requisite for adequate discernment.

14. By completeness we mean the synthetic grasp of a nexus of coördinated relations. It is more akin to clarity of discernment than to acuteness but it adds something which neither of these qualities contribute. It reveals, for instance, a face as a whole and not an aggregate of features; a landscape as a composition and not a desultory panorama. It synthesizes and merges gradations and outlines and transmutes the particulars rendered evident by sharpness of sight into the coalescent elements of an internally consistent whole. It illustrates, for example, and brings into the scope of vision the synthesis of geometrical forms which combines the elements of a Greek temple into a self-sustained unit of floating beauty. It is the crowning character which gives unity and significance to the other requisites of discernment.

15. For adequate discernment, in conclusion, the characters of clarity, acuteness and completeness are essential. These are not to be acquired by the easy paths of impressionism and emotionalism. They require initial capacity to discern combined with training in the vision of things possessing beauty and a delight in that training. They are attainments and enjoin the devotion of accomplishment. They are, however, dependent to an important extent, on the native endowment of the perceiver and are not to be attained by any amount of mere industry.

16. We come now to a consideration of the psychological consequences of the discernment of beauty on the perceiving organism. This is a subject of considerable scope and requires for its adequate treatment an analysis of the emotions. Our object, at present, therefore, shall not be to complete, but rather to initiate, the inquiry; the continuation and enlargement of it shall be postponed until such an analysis has been made. It is, however, possible to indicate, at this point, certain essential characteristics of the consequences to which we refer.

17. That different men respond differently to the presence of beauty is a matter of common observation. The source of this difference we have already partially indicated. It lies in the varying degrees of discernment with which the relational structure

which constitutes the esthetic meaning of a thing, is comprehended. Men respond differently to what they discern and to what they do not discern. And if they do not discern the beauty in a thing, or if their discernment varies in clarity, acuteness or completeness their response varies accordingly. Hence there is a variation of attitude, with different individuals, regarding the psychological significance of the esthetic properties of a contemplated object.

18. This variation of attitude, however, is not determined solely by correlative variation in discernment. Other factors are operative in producing it. Among these is to be counted the emotional constitution i.e. the temperament of the organism. Emotions vary in kind, intensity, relative predominance, suddenness, duration, fineness and combination. They vary according to visceral states of fatigue or vigor, physiological want or satisfaction. But in spite of these differences the temperaments of humans bear fundamental likenesses which determine, although in differing degrees and details, fundamental likenesses of response. We propose to show that the presence and discernment of beauty carries with it a power of emotional determination effective not only for the temperaments of humans, but those of any other beings capable of discernment and emotional attitude.

19. The realm of being is not a blank sky but an infinite tracery of relations suffused with a limitless extension of likenesses and differences which develop out into an intelligible order. In this order there is a succession of wholes; there are wholes which are systems of wholes and the systematic wholes which themselves contain systems of systematic wholes. Whatever is in being is either a differentiated relational whole or an element in such a whole and nothing is outside of a whole. The contemplation of being, therefore, at whatever level we take it involves the discernment of a unique character pertaining to it, namely, beauty; the contemplation or understanding of the unitary forms which are present, involves the discernment of the relational structures wherein their beauty resides. This observation is extremely significant for its meaning extends into realms beyond that commonly assigned to esthetic appreciation e.g. into the world of mathematical relations, for numbers are relational

integers. It means in particular that the sensitivity to mathematical form and the discernment of beauty come together along ways that are not far asunder, and that in their convergence arises the recognition of a rational order permeated by valuational meaning the revelation and manifestation of which is nothing other than philosophy itself. We shall, however, consider the significance of this at another time; at present we are concerned with the psychological consequences of the discernment of esthetic values.

20. The fact that the realm of being is made up of wholes has considerable significance both for the psychology of knowing and for the consequences of discernment. Beauty, we have seen, resides in value-bearing entelechies. Now wherever there is the appearance of scatteredness and disintegration of things there is distraction and dispersion of the attention in the perceiver who contemplates them. The attention is, as it were, fragmentized and dissipated on a confusion of disjointed and irrelevant items and the affective responses are likewise disintegrated and chaotic. Where, however, a whole is contemplated the attention is integrated and focused. There is a causal determination between the nature of the thing and the awareness of the perceiver which establishes a fixation of the attention. Now by the fixation of the attention and wonder we refer to one and the same psychological state. Every whole is, in this sense, a wonder-evoking thing. But the attention may be fixated by many things and the fixation of the attention does not persist where the whole on which it is fixated does not contain relational wholes within itself which retain it. Thus the differentiation of an integrated whole prehends the attention and transmutes it into a fixed and progressive wonder. We can understand this as we see the biologist pouring over a living organism, perhaps insignificant or ludicrous to the ordinary eye, but capable of producing a life-long and increasing wonder in the eye that sees. Now for that which possesses derivative value, i.e. value as a means, we have a kind of respect which issues from our attitude towards the thing for which it is serviceable. For that, however, which possesses intrinsic value or that in which we recognize intrinsic value, we have esteem. The value, moreover, in the personality which constitutes

a beautiful thing is intrinsic value. The presence of beauty, therefore, which is discerned, awakens esteem. But a differentiated whole, adequate to constitute a personality fixates the attention and establishes an attitude of increasing wonder. Wonder, however, together with esteem is admiration. Admiration, therefore, is an element in the psychological power which the presence of the beautiful exercises over sentient things. This admiration is conjoined with an enjoyment and delight the peculiar nature of which we shall have occasion to consider at another point. It, however, evokes a desire and a longing which is nothing other than love and so the contemplator of the beautiful passes in attitude from wonder to admiration and from admiration to love.

21. To see the intelligibility of a thing is to see the thing, but to see the thing is to see its beauty. The presence of the beautiful, however, which is discerned, engenders love, and with that love arises the desire for greater beauty and deeper discernment. There is thus a reciprocal action between the desire for and the discernment of the beautiful. The one engenders the other and there unfolds in the interrelations of the two a dialectic of ascending appreciation. The orientation of the emotion of love on the beautiful engenders a desire and a longing for discernment. The advent of discernment reveals undiscovered realms of esthetic meaning and holds the attention in an intensified and augmented grasp of attraction. The discernment of beauty generates desire which leads to further discernment which, in turn, leads to intenser desire and this increases indefinitely to an all-engrossing passion. Those who have fallen under the spell of such a passion are not greatly concerned with the common ends which men, in their haste, set up for themselves without insight and without examination. They are not in a hurry, for they have the object of their love before them; they do not run about hither and thither as do those who are seeking apparent values in a world of particulars, but who do not, in fact, know what they are seeking, but only that they are seeking. Nor are they on the other hand, impassive nor apathetic, for they are held in the power of a focusing desire, which carries them on with relentless certainty to the widening dis-

cernment of the significance and the value in the realm of being. One, however, held in the power of such a motive is, as is well known, in the eyes of those who are set in motion by other desires, who are concerned with derivative values the meaning of which they are not aware, and who are immersed in the accomplishment of private ends, to the exaggeration of which they put no limits i.e. practical men, stark mad. This is, as it always has been, and as it will continue to be as long as the human race retains the psychological equipment which has hitherto characterized it.

22. Now the discernment of the beautiful which ignites love in the soul of the contemplator attains its origin in the perceptual cognition of particular things. Such beauty we call esthetic or perceptual since its province is that of things perceived by the senses or by the imagination. In this province exist the concretions of entelechies and the manifestations of existential personalities. But we have seen that by purposive reintegration relational wholes are enveloped by wholes more complete and more integrated. With the extension of discernment the vision of the contemplator passes from one thing of beauty to another, and thus from many things to the relational wholes which are existential worlds, and from existential worlds to the wider realm of being itself and to the intelligible beauty of the ontological forms which it includes. Now this unlimited realm of being is a system of relations which converge at points to the formation of purposive centers which, as we have said, constitute entelechies. But these entelechies are bearers of an intrinsic value which enlarges as the entelechies ascend to more complete and comprehensive wholes. A purposive nexus, however, participating in intrinsic value is an instance of beauty. Hence as the entelechies rise they contain progressively greater contents of that quality. And the power of their beauty which expands in a radial network enveloping and absorbing all other things, draws and apprehends, by the psychological determination which it exercises, the love and wonder of sentient things. And a man who gazes on this order and sees it exfoliating before him becomes mastered by a striving increasingly more dominant, for the vision of its unity and the discernment of its valuational meaning and, like the astronomer

exploring successive universes in the furthest reaches of space, he stands fixed, intent, self-oblivious, as one in a dream, lifted far beyond the realms of time and existence and participant in the non-temporal eternity of the beautiful.

This, then, we shall say, is the consequence of discernment on the attitude of the contemplating organism.

REALIZATION

1. We use the word realization in this essay in its literal sense i.e. as the rendering of something real. Now that alone which can be rendered real is the unreal, namely, the fragmentary, apparent and incoherent—in other words, the actual (Essay on Actuality, par. 3). The realization of the apparent consists, as we have seen, in the manifestation of its relational orientation in the implication of the independent. In this way its rational continuity with the rest of being is made evident and the thing is viewed, not as a disparate particular, but as a whole of relations mergent into a wider world of relations. Realization, in short, and revelation are one and the same. Nothing is unreal except in the manner in which it is envisaged and the completion of vision obviates the illusory and unreal in the thing.

2. The adequate manifestation of a thing, however, comprehends, as we have seen, a manifestation of the relations which constitute its esthetic meaning. The realization of a thing is, therefore, concomitantly a rendering evident of the value wherein lies its beauty. The rendering evident of value, however, is art. It is the true making of things, namely, *ποίησις*. Art, therefore, and realization, are identical, and the art which has to do with the rendering evident of the value wherein the beauty of a thing consists is an element in the general art of realization.

3. Now the limits of this art are infinite. They include the whole range of relations into which the thing enters. They thus include the rendering of a thing actual as well as the rendering of it real. That is: the actualization, or the introduction into the scope of perception, of a possible thing is part—in fact an initial part—of the process whereby the thing becomes an object of knowledge. This knowledge, when adequate, extends to the nexus of relations in which the thing exists and the inadequate envisagement which was the unreality of the thing disappears. The actualization then, or the making of a thing, is a step in the dis-

covery of its beauty. This process of making is a causal process and is itself, as manifested, nothing other than the actualization in awareness of the history which includes it. The history thus which constitutes a particular which is a work of art, is part of the history of the artist who made it, and in a certain metaphysical and literal sense a man is his work and his work is the man. In particular, the dramas of Shakespeare, the dialogues of Plato, the paintings of Leonardo, are Shakespeare, Plato and Leonardo respectively. They are essential parts of the particular histories to which those proper names are attached.

4. The process of realization thus is nothing other than a leading of the awareness to the envisagement of a thing as a relational whole. In so doing the integral form which makes up the beauty of the thing becomes evident. The first step, as we have indicated, in this process is the actualization of the object to be realized i.e. the introduction of it into the scope of perception. Now the realm of real existents comprehends all possible particulars (Essay on Existence, par. 11), and every particular, including a work of art, which is actualized, is taken, as it were, from the non-temporal realm of possibles. The rendering actual of a possible, moreover, unless it is fortuitous, requires an antecedent cognition of that possible. The cognition of possible particulars, however, is imagination. Hence for one who is to bring forth forms of beauty from the realm of possibles, namely, for an artist, imagination is a *sine qua non*. But all things perceptible by imagination i.e. all possible particulars, are not beautiful. Thus the selection of those possible things which possess the value of beauty, requires not only imagination but discernment i.e. appreciation (previous essay, par. 15). But the union of imagination and discernment, namely, the perception of possible things whose beauty is evident is esthetic conception. Esthetic conception is the recognition of particular unactualized embodiments of beauty through imaginative discernment. It is essential to the process of realization.

5. The awareness of an artist is, hence, not fastened to perceptual immediacy nor imprisoned in the narrow bounds of the actual. It transcends by imaginative grasp the common world of

matter-of-fact. It is filled with suggestions, glimpses, insights, intuitions and visions. These are not forced up in response to routine repetition nor administrative command. They obey the law of the casual and the unintentional. They require leisure for their generation and defy regularity. They respect neither time nor circumstance but originate as nature and the coincidence of events bring them forth. They arise out of the correlation of external syntheses of facts with internal syntheses of suggestion and come at random out of wonder and contemplation as synoptic insights. But they do not arise merely then fade into oblivion. They are held by the discovering imagination as objects for a sustained fixation of vision which permits the artist to gaze on them, apprehend them, and incorporate them into actual things.

6. Now it is owing to the characteristics of esthetic conception which we have just indicated that such conception is by no means a necessary concomitant of erudition. Men of considerable learning and hardened critical ability who do things excellently by rules and routine may fall short in their products, of any imaginative originality. They often find their chief field in education where they are authoritative traditionalists. Such men are divided into a number of classes but among these, two psychological types are represented which stand out with particular prominence, namely, the ritualist and the bureaucrat. They are the typically mechanical-minded men in the repugnant sense of that term. Their minds are invincibly literal and prosaic whether they operate in art, science, religion or education. Their breath like the death-dealing fumes of a nitrous gas stifles all individualism and all spontaneity—it leaves behind it a spectral landscape of barren ground, desolate trees, earthy bleakness and blessed mediocrity of life working mechanically according to rules and regulations and doing everything as it should be done. It develops into an apotheosis of the safe, the hackneyed and the insipid.

We shall not, however, dwell on matters sufficiently evident in themselves but proceed to an exposition of the relation between the process of art and the formation of an esthetic conception.

7. The incorporation of an esthetic conception into an actual object is the process of artistic production, namely, execution. Execution involves technique and facility in the application of technique i.e. skill, peculiar to the special arts. The relation between execution i.e. the intentional actualization of an esthetic form, and the technique adequate for that execution constitutes an esthetic problem of considerable importance. It is, however, outside the scope of the present essay and could only be treated individually with respect to the special arts. Our concern, at present, however, is of a different nature. It is the indication of the characteristics of a work of art which give it, in general, a prerogative position as an instance of beauty.

8. A work of art is the incorporation of a possible particular, which possesses the intrinsic value of beauty, into actuality. It is an instance of manifestation. It is the direction of the awareness relation involved in the perception of an item, to an item whose entelechial unity is manifest. The production of particulars whose value-bearing unity is not manifest is not art. Such particulars may possess beauty, for, as we have seen, the quality of beauty is a type of value residing in a relational configuration. If, however, this beauty is not evident the character which it lends to the object which embodies it, is not discerned. Hence the thing is considered neither as an object of beauty nor as a work of art, irrespective of what native beauty it may have. That in which the quality of beauty cannot be discerned is for human perceivers ineffective as an esthetic object. The distinguishing function of art, then, which differentiates it from other types of production, is the facilitation of discernment. It engenders objects which lend themselves readily to the appreciation of the beauty resident in them. Works of art, however, are not necessarily more beautiful than many other things which are not of human genesis. They are, nevertheless, objects in which, for the most part, the relations which constitute beauty are more readily discerned. Art is, in sum, the facilitation of discernment.

9. Now there are many ways in which this facilitation of discernment is effected. Of these, however, two are fundamental,

namely, simplification and detachment. We shall consider them separately.

10. By simplification we mean the selecting out, the elimination from a composition of those elements whose connection and coherence are not reasonably manifest. It follows, of course, from our definition of art that it depends, as art, on the intelligence and discerning power of the observer. The unities which are evident to one may not be evident to another. Hence what exists as a work of art for the former will be an object of esthetic indifference to the latter. The range of art is limited by the scope of appreciation of the group in which it arises. This, however, is somewhat of a digression. The simplification of a composition by selecting out elements incongruent with its unity or personality renders evident the interweaving of likenesses and differences which it contains—it reveals its open and latent harmonies, its symmetry, rhythm, and coherence. It furnishes a complete object of contemplation on which the eye of the mind can rest and manifests the continuity of included differences which leads the attention on to wonder and admiration. It lifts the object out of the chaotic humdrum of tumbling circumstances and sheds on it a glory and repose through which it is contrasted with the incoherent jangle characterizing the routine of common life. Thus a work of beauty is a point of Olympian serenity in a turbulent sea of repetitive events. It integrates the understanding, holds the attention and invites a fixation of the intelligence on the timeless and the valuable. Owing to the selective simplification for unitary form present in a work of art, there is a heightening of discernment and an intensification of the emotional complement which goes with it. Such simplification involves an economy of expression and a maximum esthetic result with an obviation of superfluity of means. Everything leads to a focusing and integration of the intuitive powers and to a centering and elevation of the affectional attitude correlated with an expanding scope of clarified appreciation.

11. Now that which is coherent colligates different items of attention and memory into a whole, the completion of which, engenders psychological integration. That which is incoherent, on the other hand, disperses the perceptions involved in attention

and memory, dissipates contemplation into fortuitous and disconnected reactions and, in sum, engenders psychological distraction. The advent of distraction, however, is the advent of emotional conflict. It gives rise to the self-opposition and impotence of internal turbulence. From the outer discord of things as viewed through the eye of perception, therefore, there arises an inner discord in the soul and this discord leads to meaninglessness, vacillation and triviality. From the outer harmony of things, on the other hand, as viewed through the eye of reason, there arises an inner harmony in the soul and this harmony leads to a vision of that which is at once meaning itself and the locus of incorporate beauty. It follows that the contemplation of beauty and the maintenance of psychological health i.e. emotional integration, are concomitant. The nourishment of the psyche on that which is self-concordant gives to the soul itself, balance and self-consistency.

12. We have said, to continue, that selective simplification is a process whereby art procures the facilitation of discernment. The examples of this are, of course, without number. We may, however, suggest certain of them. They are seen in the majestic simplicity of an Hellenic temple, in the curvilinear beauty of an Egyptian bas-relief, in the Æschylean grandeur of an Attic tragedy, in the penetrating clarity of a sketch by da Vinci or in the confident exquisiteness of a Dürer. In fact, wherever art approaches its highest expression there is, in its creations, the exercise of a selective certainty almost daimonic in its surety which makes its products stand out—shedding all irrelevant superfluity or affectational excess—in the pristine candour of their essential beauty.

13. The cognition of this beauty, however, is, as we have pointed out, a matter of discernment and where an item is either the object of bodily desire or the instrument of attaining ulterior ends the attention of an observer is directed towards such relations and to that degree diverted and obscured. The fixation of gaze necessary for the discernment of the relations bearing the intrinsic value wherein the beauty of the thing lies is lessened; and in this way discernment, instead of being facilitated, is

obstructed. This is particularly true of organisms habituated by daily life to consider everything in terms of its instrumental significance. A work of art, however, is by the nature of its being detached and set outside the grasp of practicality. Since such practicality is rendered unfeasible, the attention of the observer is not diverted towards it and the appreciation of the intrinsic form of the thing is rendered more facile. It is possible to cut down a tree and saw it up into lumber; it is not possible to do so with a painted tree. The detachment of a work of art from any causal series which leads to its mechanical exploitation is, like the selective simplification exercised in its actualization, an element psychologically auxiliary to the facilitation of the discernment of esthetic values which it contains. Objects other than products of art may possess beauty in a degree as high or higher than works of art. It is probable, however, that if those objects possessed, at the same time, greater mechanical advantages, few except those trained to perceive would contemplate the native beauty of the things rather than the ulterior advantages derivable from them. All consideration of an object in terms of its practical significance, furthermore, is a consideration of it in terms of time. It is, however, of the very character and essence of discernment to consider the object to which it is directed in terms of its non-temporal existence i.e. in terms of its reality. Whatever obstructs such discernment diminishes the power of the object as a work of art. Beauty is an ontological category and is a sister of timelessness. The envisagement of an object with the interest projected to its mechanical or other ulterior advantages is the envisagement of it in terms of time as a temporal means to other ends, and whatever derivative merit such consideration may have it is alien to the power of the object as a work of art and to the value of its beauty, which, as such, is immediate, final, and self-consummate and requests no justification outside of itself.

14. A work of art, in sum, *is* such, because it carries a high suggestive value for the cognition of its beauty and this suggestiveness is augmented by the detachment of the object from the temptation of exploitation. The object is present valuationally in its own right, unassailable and invincible. It can be de-

stroyed but it cannot be subordinated to other ends; it can be effaced from actuality but it cannot be perverted in its use. It has the power of beauty and the ability to call forth adoration; and sooner or later the perceiver, when his discernment is awakened, must, rather than attempt to exploit it, bow before and worship it.

15. Now the properties of an esthetic object to which we have referred pertain to the products of the various arts. There is, however, considerable discussion about the comparative ranking of the arts regarding their respective degrees of value. But beauty, as we have seen, is ontological, not psychological, and inherent in the things which possess it. It is independent of the appreciation whereby it is discerned. It is discovered and not created *ex nihilo*. From these things it follows that there are no arts intrinsically more capable of the incorporation of the form of beauty than other arts. Painting is not essentially more beautiful than music or music than poetry or poetry than mathematics. These different arts possess whole worlds of relations out of which they may actualize the forms of beauty. They are unlimited; their scope cannot be exhausted. It is, however, true that the appreciation of esthetic value differs for different individuals according to their sensory and emotional constitutions. Such differences must affect individual powers of discernment and thus for any individual or group of like individuals, render the values of one or of certain arts, more accessible than those of others. In this manner, then, different arts will have a different power over different perceivers. But since, as we have said, men judge that there is no value where their obtusity prevents them from perceiving any, it is not uncommon to hear the devotees of one art exalt that over all others. Such one-sidedness, however, rather than touching the arts thus discriminated against, only manifests the esthetic provinciality of the judging perceivers. The realm of being, moreover, just as it is full of languages (Essay on Relation, par. 43) is full of arts and only a few of these are cognized by humans. It is quite out of the question to evaluate one, in this order, over others. Even the differences in estimation of the known arts possess nothing absolute in their

nature but indicate the differences in constitution of the organisms which make the judgments.

16. In the dialectic of ascending appreciation and of esthetic creation to which we have previously referred there arises not only a heightening of the esthetic content in individual works of art but an extension of the scope of the relational unity which constitutes them. The artist and his community react on one another. With the development of general discernment, the community itself participates more in the process of esthetic realization. There arises an awareness not only of the significance of individual works of art themselves but of the formal unities in the immediate environment in which they exist. There is, thus, an extension of the scope both of a work of art and of the artist which produces it. I.e. the community itself becomes an artist and the material on which it works is the whole environment. The environment is transformed to facilitate the discernment of its inherent beauty. Now the modification of the perceptual environment occurs in two ways: either by an external modification in the environment itself or by an internal modification in the psychology of the perceiver. Both of these modifications are determined largely by the culture traits which dominate the habit responses of a community and which determine the character of the desires and the emotional attitudes common to the members of the community. Both external and internal changes are brought about by the march of a culture through the histories which constitute a social group. A culture, as we have noted, determines what men look for, what men perceive and what men do. The actual world is, in short, not wholly but predominantly a societal product (*Essay on Actuality*, par. 22). Out of the realm of existence, made up of an infinite system of interwoven histories, a few of these histories are manifested in awareness and these few histories which are metamorphosed into appearance and dissolved into the fluency of time through the instability and transition of the awareness relation, constitute the actual world. Which histories shall be manifested depends on the causal and purposive liaisons of an actual present with the content of a present which is no more actual, and the

characteristics of events which constitute the culture of a community are fundamental elements in the causal and purposive relations which contribute to the eventuation of a new actuality. Now as the dialectic of esthetic appreciation advances and becomes an incorporate part of a culture (such as occurred in Germany with respect to music and in Greece with respect to all the arts) the discernment of the social group enlarges and, in consequence, as the community participates in, and demands the production of an environment consonant with the scope of its capacity for appreciation i.e. as the community itself takes on the rôle of an artist, the whole environment is modified with a view to the increased realization of its potential esthetic values and thus spreading before the eyes of men the entire actual world is enlisted in the service of wonder-engendering form and instead of the incoherent, distractive chaos thrown forth by chance, it is modified, without disturbing the free beauty of nature, into a whole of elements reaching up into higher and more significant harmonies. Actuality, in short, as a societal product becomes the work of art of a culture; and a culture attains value in so far as it realizes, genuinely and completely, in the actual world which it produces, the concrete meaning of the beautiful.

ATTAINMENT

1. By an end we mean a conative object (Essay on Purpose, par. 31). By accomplishment we mean the actualization of an end. Ends or conative objects may vary in value. By attainment we mean the accomplishment of an end which embodies value. The attainment is greater or less according as the end attained possesses greater or less valuational significance. Accomplishment thus, we say, is the consummation of a process which leads to an end; attainment is the consummation of a process which leads to an end possessing value. Accomplishment, according to this definition, and value are not necessarily conjoined; attainment and value are. Attainment is of value only.

2. The value which is present in attainment is intrinsic. Wherever there is intrinsic value which is susceptible to actualization, attainment is possible and wherever such value is absent the possibility of attainment is absent. Derivative values since they receive their meaning as such only from the intrinsic values to which they lead are not the proper subjects of attainment, for if they alone are accomplished, without the realization of their determinant intrinsic values then, in fact, no value is attained. Attainment is always of something, which though not timeless itself, whose value is timeless i.e. intrinsic, and which possesses worth not in its instrumental relations to other things but in its own being. A thing of intrinsic value is a thing which possesses valuational autonomy. Its value is contained in its essence. A thing of derivative value is a thing which is subject to time and accident—which does not possess its value within its own essence but only in its causal relations to other things. All attainment thus, although it is manifested in a temporal process, aims at the timeless.

3. This, however, leads us to a delimitation of the realm of attainment, namely, the realm of being in which that process can occur.

Attainment is a passage from the manifestation of a less to

that of a greater, intrinsic value. It is thus proper to the realm of particulars, for this realm alone embraces change. But the realm of particulars is the realm of existence i.e. of histories, and the realm of particulars in its own nature is the non-temporal realm of real existents (*Essay on Existence*, par. 13). Attainment, however, is a temporal process and hence its proper domain is one in which change and time are present i.e. it is the realm of maximum unreality and imperfection, namely, actuality. Actuality is the incomplete manifestation, in the awareness which relates individual histories, of existential particulars. These particulars appear in an unstable, incoherent, contradictory and disconnected manifold. And as they thus appear outside the field of rational intuition their valuational meaning is only partially manifested i.e. they are, as actual items dependent on perceptual awareness, valuationally as well as rationally defective. There is an identity, in other words, of their logical incoherence and their valuational imperfection. The realm of attainment is the realm of the imperfect and incomplete. Were such not the case there would be nothing to attain. The attainment of value is the cognitional completion—the contemplation and vision of this realm of apparent disjuncts in terms of its timeless reality and its connectedness in the order of being. It is, in short, seeing it in the whole of its implication. The possibility of attainment is thus a mark of defect and inadequacy, but the striving for attainment is the striving of a finite subject for completeness and realization. It is the seeking of the unreal for the real.

4. Since attainment is a passage, a transition from the inadequate to the adequate, it exists, as we have said, in a temporal world and is not incorporate in the realm of being. In this realm there is a perpetual i.e. an instantaneous or timeless, realization which is at once a consummation of intelligible relations and a full fruition of value.

5. The fundament of being is the independent. From the independent issues the whole rational order of likenesses and differences which constitute the universe of heteronomous things. There is no attainment in the independent but all attainment receives its non-temporal basis and its temporal actuality through and from that reality. The domain of the independent is neither

a drama nor an epic—it is a transcendent and autonomous realm of value sustained in its own being. It is not one thing at one time and another at another—it is instantaneous in an instant of realization which embraces, integrates and transfigures all temporal content. Attainment in the realm of actuality is a striving to transcend the barriers which divide the temporal and incomplete from the timeless reality of value comprehended in the independent. It is evoked by glimpses and intuitions, and rises, where the conditions of existence permit, to oneness and wholeness of vision. It is the true *φύγη εἰς φιλοσοφίαν*, the *ὁμολοίσις θεῶν*.

6. The process of attainment thus enlarges in scope as the possibility of cognition increases i.e. as particulars are considered in which value-discernment is possible. This brings us however, to an inquiry into the relation between attainment and the internal motivation of the individual organism which leads to it.

7. The discernment of an instance of value in the realm of possibles may, according to the nature of the perceiver, incite a desire for its actualization and, in continuation of this desire, for its complete discernment and realization. Undiscerned values, except vaguely and ineffectively, do not engender directed desires. Discerned values on the other hand may become conative objects. The desire evoked by an instance of value discerned, sets the organism into action and initiates thus a causal process which receives its consummation in the actualization of the inciting instance of value. In this process of attainment not only the desire evoked but the value aspired to are causal factors, and the process is thus an example of the causation of possibles operative through psychological purposiveness (Essay on Actuality, par. 13). The response referred to, motivated by the impelled desire, we have called action. Action, however, in this sense is a form of conduct and does not necessarily involve motion or ostensible activity since there are occasions when quiescence, or restraint, is the significant character of the behavior which leads to attainment. Indeed activity in itself is frequently a retardative rather than an auxiliary factor. Such occurs, to take an example from medicine, when the health of a patient is impaired by unnecessary surgery or superfluous therapeutics.

8. Summarizing: discernment reveals a value. The value

ignites a desire. The desire sets the organism into action. The action is directed to the actualization and subsequent realization of the value. If the instance of value is genuine and not apparent and if it is realized, the consummation of the process is attainment. It is by the causal power of a possible operating through psychological purposiveness that attainment is effected.

9. Now instances of value may be real or apparent. Apparent values reside, for the most part, in things which we desire and therefore attribute value to, as contrasted to things in which value is discerned and which are therefore desired. False or apparent instances of value are engendered by promiscuous and indiscriminating longings—they are the illusory products of desire without intelligence.

10. Where real values, however, are concerned, genuine attainment is effected. This attainment when it is an incorporate part of the history which constitutes an individual is ostensibly individual. When its agent, on the other hand, is a community i.e. when it is an incorporate part of the complex of histories, which comprises the history of a community, it is social. Where real value is concerned all attainment has societal meaning since it is impossible for an individual to realize genuine value without at the same time causing it to become, in some degree, a social property. Hence where real value is concerned an individual in attaining it is concomitantly attaining societal value. There is a coalescence and unity of social and individual ends and activities in the process of attainment, even though this may not be clear to all the members of any given community e.g. as in the case of Socrates. Where values are illusory or apparent there is no such societal meaning in their accomplishment. Owing, however, to the contributions of his surrounding culture to any individual in the process of attainment (which contributions are auxiliary and necessary to the attainment reached by him) there is, strictly speaking, no such thing as individual attainment. All attainment regardless of the number of individuals to which it applies is, to a greater or less extent, a social phenomenon.

11. Now since the variation of instances of value is, on the one hand unlimited, and since in a field of values there is no terminus to their intensification on the other, the limits of attainment are infinite. There is no attainment which does not possess the ontological possibility of being surpassed. There are, however, inherent in the striving organism, limitations which put a term to the height of its attainment. These reside in its power of action and in its scope of discernment. But these factors are subject to variation for different individuals. The impossible is always done by a man of transcendent discernment because he sees values beyond those previously attained to which his contemporaries were impervious. It was at one time thought, for example, that there was no other geometry besides that of Euclid and that there was no other physics besides that of Newton. Knowledge, however, of whole fields of mathematical and physical meanings in addition to these has been attained by men who could see relations beyond the vision of their predecessors and their contemporaries. In the arts—in music, painting and poetry—the same phenomenon of surpassing accepted limits is not unknown. It is only necessary to consider Wagner in music, Shakespeare in drama or Cézanne in painting to get some intimation of this. The range of value to be attained and incorporated into actuality is inexhaustible. Indeed the attainment that has been hitherto effected though relatively great, is but infinitesimal in contrast to the sea of values in the expanse of being. Limits to attainment are only laid down by men because the restriction of their discernment does not permit them to have an inkling of the realizable wealth of values which, as it were, lie at their threshold. The world is continually surprised at the presence of new and unsuspected attainment. If it did not see with myopic vision it would be amazed at its ineptness in not bringing forth unprecedented values which await only the extension of knowledge and its intelligent application for their actualization.

12. Judgments of value, however, are subject to error. Hence judgments of attainment are subject to error. Now error in judgments of attainment set up various processes of sham attainment which are, in general opinion, mixed with and undis-

criminated from, instances of true attainment. There is a certain glamour of appearance in all phases of human affairs which the simple-minded identify with attainment and the chauvinistic exploit for the sake of attaching the appearance of attainment to themselves. No man knows when he is deceived; it is only when he is undeceived that a deception practiced on him becomes manifest to him. And all men are deceived some of the time. It is this state of being deceived without knowing it which permits the eternal sophist in humanity to range in the apparel of sham attainment over the affairs of men and set up the appearance of values which are not present. The death of attainment generally comes when men learn that they can thrive by shamming. The only effective means for the removal of sham attainment is the cultivation of discernment.

13. Now action which leads to attainment is the process of construction. Action, on the other hand, which defeats attainment or obstructs the realization of intrinsic value, is destruction. There is in social life a balancing of constructive and destructive activity. There is, of course, in the long run an ascendance of the former, for if not a society would cease to exist. But with respect to values above those involved in existence *per se*, it is by no means easy to discern the relative merits of many types of action. Owing to the general presence of sham attainment, a community is quite uncritical and is, for the most part, unaware or only partially aware, of the genuine values which are in process of realization within it.

14. Considerable sham attainment masquerades under the guise of success. By success, we mean the accomplishment of an end which evokes social approval and admiration. Since, however, men in general are undiscerning, success is no measure of attainment, for attainment involves the realization of value only. Success and attainment may be and often are antithetical. Much, in short, of success is sham attainment of the most puerile kind. Thus we have physicians that try to make up by the pomposity of professional bearing what they lack in solid knowledge, teachers who try to swell their prestige by pandering to the foibles of the immature judgment of those to whom they present their wares, lawyers who bring silly and deleterious cases to court and

thrive by chicanery on the folly and psychological obtuseness of juries, merchants who throw goods onto the market which men would be better off without, promoting them by misleading appeals, priests and clergymen who thrive on the superstitions of mankind and under the guise of righteousness, promulgate dogmatic and stultifying systems of conduct which poison psychologically the natural functions of men and pervert their native and wholesome instincts, and finally artists who resort to the trivial and piquant because it pays. For every species of attainment, in fact, there is a species of sham attainment and for every realizable value, there is, owing to the limitations of human discernment, a species of pretence which cannot be distinguished by the undiscriminating from valid attainment. To a man who is not acquainted with a subject it is an easy matter for a charlatan to present himself and establish an appearance of knowledge. If such occurs it is necessary, in order to dispel the illusions set up, to make evident the nature of the subject (in so far as this can be done) and thus reveal the character of the illusions as error. But such a process requires application, study and time and these are, in most cases, not possible. Hence fallacy and sham always have an extended range of secure territory in any social group. Prestige is built up in many ways and the way of attainment is only one of them—and it is the hardest. Where merit is lacking men, for the sake of success, which they worship in proportion to their blindness above all other things, follow the way of pretence, appearance and sham attainment. This condition, as we have pointed out, is rendered perpetually possible by the admiration of the undiscerning. The admiration of the undiscerning is, in short, the one fundamentally destructive agency in human affairs. In comparison to it crime and transgression are nothing. It is the primary cause of evil in man and is in fact the very essence itself of evil, for out of it comes all the other banes dependent on human causes, which affect the societies of men. It is the support, the basis and the promoter of sham attainment. It is the element which emphasizes the deluding and irrelevant factors of magnitude in performance, notoriety, influence, materiality, visibility and the fallacy of inverted valuation—the elevation of derivative over intrinsic values.

Since these things we take to be so manifestly true that they require no other demonstration than a mere directing of the attention to them it follows that one who has any desire for genuine attainment will strive first of all for knowledge and the discernment which accompanies it. Attainment we have seen is realization and realization is nothing other than the cognition of things in the completeness of their relations (previous essay, par. 1).

15. In the flux of actuality—and actuality is the field of attainment—one of the commonest misconceptions is, as we have indicated, the confusion of activity *per se* with attainment. Where there is activity there is commotion and where there is commotion there is a kind of exhilaration and emotional catharsis. The appearance is thus easily produced that there is also the attainment of value. While this may or may not be true it is not necessarily true and is frequently false. Where action is combined with, or results in power, the excitement of affective response is in general combined with admiration and perhaps fear, both of which emotions are conjoined with awe or respect. Hence activity *per se* is often confounded with attainment and ambitious men of a restless and fidgety type are revered as great or heroic even though the consequences of their action are private gain, social destruction and cultural retrogression. There is no lack of such men at any time but for the sake of example we may cite two who happen to have had the good or bad fortune of becoming notorious, namely, Napoleon and Alcibiades. These men are types of the hero of action such as men revere. They made, during their lives, considerable history: they left singularly little behind which was, as a compensating factor, a contribution to civilization—for civilization is nothing other than societal attainment, the incorporation of intrinsic values into communal life. Had Archimedes, Copernicus or Newton not lived the outlook of men and the values which they realize would be considerably different—had Alcibiades or Napoleon not lived our losses in discernment and attainment could be measured without many tears.

16. We come now to the conditions under which value is incorporated, through the process of attainment, into a particu-

lar life or history. An apparent problem arises regarding such incorporation. There is an ostensible choice between the greater attainment of one or a few special values on the one hand, or of the lesser attainment of many diverse values on the other. The problem, however, harbors an assumption which is not valid, namely, that values are disparate and unconnected. There are, on the contrary, some values which are fundamental and anterior to others and the attainment of these does not exclude, but involves, the attainment of a range of cognate values which follow, as it were, in their train. There is sometimes a temporary but there is no basic conflict in the realization of primary values. In every life some values are realized but the absorptive power for value of a life lies in the attainment of fundamental values which bring with them a subordinate range of concomitant values. Such, as we have indicated, are the values of the beautiful and the intelligible. These are, in their essential natures, compresent.

17. The attainment of value in a life is conditioned not only by the properties of that life but by the nature of value itself. There is, as we have seen, a coherence and interconnection of values. With the coalescence and integration of instances of value there is a reciprocal intensification of their relative valuational content (*Essay on Pleasure*, par. 22). The factor, therefore, which shows the mutual meanings of apparently disconnected values and thus relates and unifies them, is the factor which permits the incorporation into a life, of distinct but non-conflicting items of worth to form a valuational whole of progressively heightening intensity. It is the factor which permits the coördination of pleasure, beauty and intelligence—of science, art and philosophy into a single organic design enveloped in an existential history. This factor is discernment, for discernment shows the relations and the orientation of things in an intelligible order. It realizes i.e. unifies and renders coherent, the unreal—the logically and valuationally fragmentary. Discernment, in so far as it can be attained, produces in the individual life an integrative receptivity to apparently disparate values. It permits both the intensification of fundamental and the absorption of subsidiary values; it gives a valuational meaning

not only to an experience here and an experience there but to the whole range of experience in the individual history. In short, all aspects of the realm of being and of the world of actuality take on rational and valuational interest to an organism whose discernment manifests to it the intelligible unity of things.

18. In the attainment of value by the individual, however, there are factors which may be either promotive or retardative. The first and principal of these is pleasure and hence we shall consider for a moment the relation of pleasure to attainment. In regard to this relation we shall consider three cases: (1) where the presence of pleasure is a deterrent to attainment i.e. where there is a choice between pleasure and attainment (2) where the absence of pleasure is a deterrent to attainment and (3) where attainment is not only accompanied by no pleasure but by pain.

19. It is not difficult to see that in the first case there is a certain pusillanimity in fostering, or even recognizing a pleasure as significant, which absorbs the energies and deflects the activity from the realization of value. Pleasure itself, it is true, possesses value. The value of pleasure and its limitations we have already considered (*Essay on Pleasure*, par. 25). The value of pleasure is not insignificant but it is, in the face of the values either of the beautiful or the rational, scarcely within the range of consideration. There is, for the most part, no fundamental conflict between pleasure and attainment—the two are associated—but whether or not such a conflict arises it is irrelevant to the meaning of the value to be attained.

20. These observations apply equally to the second case i.e. where the absence of pleasure might operate as a deterrent to attainment. The value of existence is not exhausted either by pleasure or the private feeling of psychological well-being which passes under the general conception of happiness. There are values regarding the attainment of which the presence of these items is secondary. The essential question to be asked with respect to any cause of action is not whether it contains pleasure or happiness but whether it moves towards an end the attainment of which comprehends value of intrinsic significance. The absence of pleasure is an extraneous consideration.

21. In the third case i.e. where attainment is accompanied with pain we are still obliged to affirm that a human is not, for this reason, provided with a grounds to be deterred. Value as an end is irrelevant to pain in attainment. The pain in no sense renders the value less valuable, or makes it any the less significant as an end. An individual who refrained from attainment because it was connected with pain would be like a mathematician who was sufficiently spiritless to refrain from solving a problem or from proving a theorem because it involved several days of calculation. If, however, the solution of the problem or the proof of the theorem is worth attaining it is clear that it is worth attaining regardless of the irksomeness or discomfort of the requisite process. The same applies to values in any art, science or activity. Attainment under pain is as significant as any other kind of attainment; its meaning does not lie in the pleasure or happiness which may ultimately come out of it. Such happiness, moreover, is a matter of circumstance and may never eventuate. But whether it does or not, it is irrelevant. Although there are values pertaining to pleasure and to happiness they are not, as a rule, realized by those who substitute them for—who push them into the place of attainment, maintaining a nervous concern for the quantities of them which they can ingest into their lives.

22. Attainment under pain, however, is subject to certain limits and to diverse mitigating considerations. First where the pain is sufficiently severe the organism may break and thus terminate the process of attainment itself. Secondly there is a limit to the extent to which attainment under pain is valid because of the ineradicable element of probability in judgments of value. An element of scepticism is, as we have seen, proper to all such judgments. The realm of value is, for the generality of men, the realm of conviction but the more discerning retain a suspicion concerning their beliefs even though they do not feel ready to relinquish them. The problematic element in the judgment of value is thus a factor in limiting the validity of attainment under increasing pain. Whether any values can be cognized with sufficient clarity to warrant the sacrifice of life or perpetual loss of happiness when the alternatives are not so severe as to

make life unendurable, is a matter of considerable doubt. Within these limits, however, pain and discomfort are factors irrelevant to attainment; the limit of attainment, where fundamental value is discerned, is not the advent of pain but the exhaustion of the powers of action. There is no primary reason why men should be happy or not be unhappy but there is a primary reason why they should endeavor to realize the values which lie within their scope whether in doing so they are happy or not. Happiness is a term which is given many meanings but if it is taken to be a psychological state, then from the theory of value presented in these essays there is value outside of happiness and the realization of that value holds within itself an intrinsic worth of attainment which is present whether happiness, which of necessity must always be more or less dependent on chance, is also present or not. That all genuine happiness is participant in value is a proposition that is not to be denied but that all value is embraced in psychological happiness is a proposition that is not to be affirmed without more conclusive evidence than has hitherto been furnished to establish it.

23. There is, in conclusion, something to be said about the doctrine of escape. Some men having made what seemed to them the profound discovery that humans are motivated by aversions as well as attractions have not been able to rest until they have interpreted all conduct as issuing from aversion—from the endeavor to escape, for escape is nothing other than the avoidance of a thing in conduct together with hatred towards it in attitude. Now the desires which arise in men are multitudinous. In any individual the desires which originate depend on his native constitution and the circumstances which, during his history, he has been subjected to. Desires at first amorphous, unfixed and undirected are, in the ontogeny of the organism, differentiated, directed and colligated. The adult shows a more or less limited complex of surviving desires. But these vary widely with individuals.

24. Now emotional understanding i.e. the understanding

which one human has of the emotions of another depend on the intelligence plus the range of variation of emotion which the individual has. The only real psychological understanding, however, which A can have of B, if B, let us say, has the emotion *x* consists in an experience of the emotion *x* on the part of A. Where, however, there is no such community of emotional experience, A cannot, regardless of what critical powers he may have, understand, in any concrete sense, the feelings which are actuating the other. He sees what is ostensible; he cannot discern what is invisible. The emotional variations of the one cannot penetrate through into those of the other. We shall call the error which arises from such lack of correspondence in affective variation, the fallacy of emotional opaqueness. This fallacy is prevalent enough and occurs generally when individuals of marked differences endeavor to judge one another. But however this may be, the fallacy of emotional opaqueness has considerable to do with notions about escape. A wide divergence of desires causes one man to wonder how it is possible that another can be motivated by a desire which differs thus emphatically from his own. Hence differences of desire give rise to perplexities of one human with respect to another. There is a common emotion, however, which all men have, namely, aversion for pain. Hence where desires are not understood it is a very easy matter to give them a kind of familiarity and understandability by interpreting them, not as attractions, but as aversions i.e. as longings for escape. Since, furthermore, men are, in general, motivated by a common set of desires for success as defined by the group in which they exist, it is an ordinary practice to interpret any desires which differ from these as longings for escape i.e. as arising only because these common desires have been thwarted. If a man desires something intensely it is, unless he is an exception, quite unintelligible to him that others do not desire the same thing or at least the same class of things. The fallacy of emotional opaqueness is, in short, although not the only source, a major and ever present cause of the doctrine of escape as the sole motivation of human action. But desire has a positive aspect and is not contained exclusively in such motivation.

25. The psychology of escape and the psychology of attainment are opposites. The one is connected with sorrow, the other with cheer. The one is interested in avoiding a hindrance, the other with reaching an object. A man may go from London to New York either because he desires to avoid something in the former or to obtain something in the latter. The external act is the same in either case, namely, the going from one locality to another. But the motivation and psychological meaning of the act is, in the different cases, different. In the one case the man is pushed from behind by fear and in the other led from before by desire. In the one case he does the thing because there is nothing better to do, in the other he does it because, out of a number of possible choices, his desire becomes directed to the value selected. In the one case his action is based on renunciation, resignation and regret, in the other on joy, assertion and self-realization. The latter produces integrated and sustained activity towards the end of attainment; the former dispersion, multiplicity of ends and intermittent efforts. Where aversion or fear is the motive of action, the action ceases when the cause of the aversion or of the fear is removed. When the cognition of a value and the striving for it is the motivating factor, there is a multiplied self-realization in the successive moments of attainment which move towards the value. In sum, it is to be noted, and this is our point, that escape and attainment, although they are interwoven in human activity, and are expressed in the same ostensible acts, are fundamentally different. They are mutually exclusive. The integration of a life around objects of attainment involves the progressive elimination of the psychology of escape. But, moreover, if attainment is realization and realization is the sublation of appearance through cognition, then there is one fundamental human process which, embracing all subsidiary processes of realization is, for finite beings, the process of attainment. What the name of this process is it is not necessary to indicate; what its characteristics are we shall subsequently endeavor to describe. It is necessary only to add that the attitude connected with the desire for attainment, is itself one of the most significant attainments that a human can realize.

THE CONFLICT OF VALUE AND EXISTENCE

1. By the term existence in this essay we refer to existence as commonly understood, namely, presence in actuality. By value we mean value in attainment.

2. Actuality is fragmentized; it is shot through with difference; its differences extending into infinite regressa mark off individuals; individuals are separated, isolated and cut off from one another; those which constitute organisms perceive one another brokenly and inadequately; they are, moreover, causally connected by a network of bonds which they apprehend partially and only by glimpses.

3. There is in this fragmentation of actuality a recurrent set of conditions which subvert or deflect attainment; which make aspiration even when most valid, often the means, not of a happy outcome but of unanticipated ruin. There is, in short, through the particularization and disjunction which reigns in actuality an ineradicable congeries of factors which generate tragedy—for tragedy is nothing other than thwarted attainment, the frustration of that which in the eyes of men merits to survive. Tragedy is thus an inherent category of actuality, of the world of juxtaposed events in the appearances which are time and change. It is a characteristic of the fluctuating sea of apparent particulars in which the valuable, crumbling before the imperious march of causation, may pass out of awareness and vanish from the cognition of humans.

4. Tragedy, however, is a property of existence pertaining to finite organisms only. The whole of existence is not tragic. But actuality because it contains the separatism which breaks off blocks of events and isolates them from the whole, bears the seeds of compulsion and frustration within itself. And no particular thing within actuality itself can alter this condition for it cannot by its very nature transcend the limits placed on it by the differentiation in which its existence is embedded. Tragedy, however, is but one of the cognate aspects of change. It exists in

actuality as the converse of attainment. Attainment is possible only in an incomplete world. But in such a world frustration is likewise possible, for if not, the world would be wholly realized. Where, in short, attainment is possible tragedy is possible and the possibility of the one follows from that of the other. The two are correlative properties of the same realm of events.

5. In a significant sense, however, there is no such thing as tragedy. A vase of miraculous beauty can, in actuality, be shattered and effaced forever. In the realm of being there are no shattered vases. Although value can rise and fall in actuality, no value is ever lost from being nor from the real existents whose partial manifestation constitutes actuality. Every possible kind of difference *is* and nothing can be excluded from existence which is embraced in the ultimate categories of reality. Whatever follows from these categories maintains its being by necessity; the omission of one difference of an infinitesimal amount is as impossible as the omission of angles from a triangle. The conditions of all possible things—and nothing is, which is not possible—are given in the implication of the independent. It follows, in addition from the fact and the necessity of differentiation, that all valuational differentia equally with other differentia shall have a status and an orientation therein. They are, in reality, compresent and indestructible.

6. But while these things are applicable to the non-temporal realm of being, when the vision is narrowed down to actuality and that alone is considered they are not applicable. It is vain to overlook the elements of tragedy woven inextricably into the fabric of any actual existential world. These elements may be transfigured when revealed by a more expansive view to fit into the purposiveness of a completer realm of being. But the very fact that such cognition is by the nature of things withheld from all in some degree and from some in all degree only heightens and makes more ineffaceable the tragedy which it discerns. It is not infrequently a matter either for amusement or wonder to see men fostering the notion that by some external and artificial reorganization of political or economic relations they can sublimate tragedy from life. It is like the endeavor to get to heaven by building a tower of Babel. In order to remove the

tragedy from existence it would be necessary to remove the particularity from the particular and that is what can never be done. Not in the remotest millenniums; not in cycles after cycles of world periods will tragedy be excluded from life, for it is in the essence and root—in the very primordial conditions which determine the possibility of life itself—that the aspect of tragedy as well as that of attainment resides. Marked within the differentiation which issues from the independent is the metaphysical foundation for the radiance of intrinsic worth and for its adoration, but from the same differentiation penetrating into the appearance, partiality and incoherence of the actual flux of nature is laid also the metaphysical foundation for the disunity, the sorrow and, in fact, the terror which infuses that domain; a domain which is—all eulogies notwithstanding—*il mondo senza fine amaro*, the world of unending bitterness. Actuality is a place of exquisite beauty paralleled by exquisite frightfulness. The two are mixed. They grow cognately out of the same ontological root. The pre-conditions of the one are those of the other.

7. It is not enough, however, to point out what is common knowledge to everyone, namely, that the world of actuality is, among realized values, also a theatre of open and latent wreckage. It is necessary to examine the specific conditions and processes out of which these characters are generated.

8. The process of attainment moves from antecedent events to an event which involves a conative object. Where the conative object is actualized in its valuational form the attainment is consummated. Where the causal result, however, in such a process does not embody the conative value the attainment is, of course, thwarted. Now, as a rule, the more subordinate the value the easier and more immediate its attainment and the more fundamental the value the more difficult and remote. By the term *easier* we do not refer so much to the effort exerted as to the talents requisite. Lesser values are correlated with lesser capacities and greater with greater. It was possibly easier, so far as effort is concerned, for Newton to invent infinitesimal calculus than it would be for many to discover a simple theorem in plane geometry. The point is, however, that in the world of actuality the possibility of attainment varies, generally, in in-

verse proportion, and its difficulty in direct proportion, to the value of the object to be obtained. There is an incongruent multiplication of obstacles concomitant with the raising of the goal of endeavor and hence in the temporal world there is a perpetual vying and conflict between the factors of attainment and those of its contravention.

9. Now wherever the appreciation of men is limited, their aspirations are likewise limited for men do not strive with any coherence for that to which they are blind. Under circumstances of minimum appreciation no considerable value outside of immediate existence in actuality is operative as an end. Since this goal is, of all, the most proximate it follows that the devotion of all the efforts to it is not hampered by their expenditure on other objects. Existence, at least for immediate consideration, is the most readily assured of ends. A man who cares for existence only may, it is true, have a task which is formidable enough. But if he adds to this the aspiration for other values of remoter and more exacting attainment his problem is by that much rendered more difficult. The higher the value the more it withdraws from his subsistence resources and the greater the risk not only regarding attainment but existence itself. A given individual may, indeed, be favored by more fortunate circumstances than others, but within the relative circumstances of any man this conflict between attainment and existence is active. As the values aspired to relative to the capacities of the individual ascend the conflict becomes more pronounced.

10. Now there are three primary types of relation in which the conflicts which frustrate attainment occur. These are: (1) the relation between the organism and its physical environment (2) the relation between the organism and its social environment and (3) the relation between the internal psychological traits of the organism with regard to one another. Each of these relations may be the source of cross-tendencies which impede the realization of value. In the first arises the struggle for existence, in the second the struggle for self-expression, and in the third the struggle for unity and integration. The discussion of the first we shall temporarily postpone and pass at once to that of the remaining two.

11. Attainment from its inception to its consummation passes through a causal series which is too intricate to be foreseen (Essay on Actuality, par. 8). Often one or a number of insignificant factors operate unexpectedly to deflect it. Not infrequently the striving which functions as a spring of action towards an object of value reveals itself, in time, to be a cause of its own frustration. This does not mean, in any sense, that endeavor toward the achievement of value is worthless. It does mean, however, that something besides aspiration is necessary in the actual consummation of the process of realization. The relations which we have just indicated supply a never ending stream of contravening factors.

12. Social life forms the basis and setting of attainment but it also contains the internal elements which hinder and impede it. The variations which these retardative elements take are myriad but they coalesce in a few initial conditions out of which, by division, the rest all emanate. These factors, as we have indicated, are two, namely: the tenacious strivings which constitute the active essences of biological organisms and the limitation of cognition, the blindness of vision, the incapacity to envisage a complete nexus of circumstances, which the separation of their particularity imposes upon them. Under such restrictions of cognition, desires and aspirations are obliged to work themselves out.

13. The strivings of men are patent. The limits to which they will go to gain their immediate ends, to accomplish what they call success, are restricted only by the boundaries which the group will tolerate; and under concealment these boundaries themselves are transgressed. There is practically nothing invidious or witless, pitiless or inept, that humans, under motives of personal aggression, will renounce. There is no kind of chicanery, virulence, or stratagem which, if it offers the possibility of apparent advantage, will not draw forth adherents. The subtle springs of action are generally covered over by comforting justification mechanisms and by the appearance of commendable motives. But the craftiness is there. These processes are followed out in social or economic classes high and low alike. Insidiousness, calumny, latent treachery, the astute trapping of others,

the exploitation of the ingenuous and all the other paraphernalia of advantage-gaining are used constantly and methodically. They are employed without stint by males or females of high self-estimation who would never recognize them nor admit them under their accurate titles. They are applied wittingly and unwittingly and become so habitual in conduct that they are taken as accepted norms. They are present in every field of activity from the priest and teacher to the lawyer, politician and tradesman. Indeed those who are concerned with the interplay of strivings in the organizations of men take these things for granted as part of the conditions to be reckoned with. A formidable contemporary in almost any field or group is looked on by the rest secretly and clandestinely as an enemy. Regardless of the blandness of external appearances which is, as a matter of policy, put forth, humans will, if their wit permits them, subvert, subjugate or destroy a competitor. Illustrations from history are countless. Newton was so harassed by his contemporaries—the so-called enlightened men of his time but quite comparable to those of any other time—that every new discovery evoked an added set of disagreeable relations and he threatened to publish no more of them. But there is little need to evoke outstanding examples of the processes to which we are referring. They are amply evidenced in the immediate surroundings of any one.

14. Of the many conflicts that are actualized within societal relations that which arises between the generations is, in its numerous forms, particularly significant. In a developing culture the psychological breach between generations is productive of decidedly obstructing effects. These may be manifest or concealed. On occasions there arises an aversion or hatred towards what is assumed to be the presumption of a group or individual in a rising generation for attempting or attaining what their seniors, in endeavoring to reach, found beyond themselves and abandoned. It appears under the guise of haughtiness, solemn pomposity, the desire to ridicule or the endeavor to belittle by the ponderous weight of authority. In such cases, which are perhaps more frequent than the aged would be ready to admit, the favor of the generation goes with its prejudices. It is pleased as

it passes into desuetude to feel—like lovers who think that no other love can possibly equal their own—that its achievements are a high water mark of human attainment and should call forth no responses other than humility and resignation. There is, it is true, no doubt that these achievements should receive the appreciation that anything of value commands. But that they should be considered as acmes rather than as foundations for more fearless, independent and expansive building is an attitude not far removed from fetishism or triviality. Men who are paralyzed by the attainments of their predecessors contribute little either to the enlargement of the discernment of others or to the realization of the values which lie within their own capacities. There is a place and a need for daring of insight and audacity of thought, for a transcendence of the lazy bounds set by a culture always tending insensibly to fixedness, for the self-asserted freedom of speculative imagination in the synthesizing of its intuitions—imagination, which, lifted on the wings of rational dialectic should soar, undaunted by the taunts of empiricists or the carping of technical critics, to the highest elevation it can attain. There is a need for a classic sense of the sublime in the mounting unities of relational form that rise through the realm of being. It is in imagination that lies the genius of knowledge-making. It is imagination that sees relations, that strikes into outline the characters of an unknown realm, that flashes its intuitions forth into a synoptic vision; it is imagination that discovers the unsuspected, that engenders and accumulates suggestions; it is imagination, in sum, that provides the clarifying hypotheses without which all the critical ability in the world would have nothing but its own empty forms to redigest. One man of imagination may make a thousand errors where others have hung to safe girders of the past, but it is he alone who produces universal propositions of truth and import—positive and not merely negative in their meaning. No point of view, no insight, no envisagement, not even scepticism itself can be made up of negative propositions only, irrespective of how numerous or how true. It is the poets not the grammarians who have made language and have given it meaning and they have done it with imagination. All men are, in their special fields, either poets or

grammarians. There is a place for each but their places differ in kind and in quality and they are not to be mixed or confused. That part of an outgoing generation which cannot brook the endeavors, the imagination and the achievements of its successors only advertises by the fact itself the inadequacy of its own self-judgment and the speckled character of its historical outlook. A passing generation can absorb all the admiration which following generations accord it. This admiration is not always commensurate with the actual attainment realized. But this condition, if it arises, provides no grounds whatsoever for the generation to acquire, as a compensating attitude, a delusion of grandeur and look on itself, rather than as a transition, as a finality.

15. The conflict of generations expresses itself not only between passing and advancing groups in a profession but also between parent and offspring. This conflict assumes a multitude of forms many of which are prejudicial to actual attainment. In a rapidly changing culture, as we have said, there is always a gap in conduct, attitude and types of evaluation between generations. The world of an earlier generation no longer is. Nevertheless the outlook of the generation is fixed and its behavior patterns established. It readjusts itself only superficially and with difficulty. In this relationship the conflict between the old and the new is never completely allayed. It is, moreover, interwoven with psychological elements by which it is accentuated.

16. The overweening passion of possessiveness on the part of the parent which is often covered up by a countless variety of external justifications is a factor which, though it operates subtly, is not ineffective in impeding the expression and development of the offspring. It is, of course, evident that a rising generation has to be molded into some kind of societal form, and discipline is essential in the process. Where discipline ceases, however, and idiosyncrasy begins is a matter not easy to discern. It is true that in a large proportion of cases discipline is neglected where it might be validly applied and applied where the personal desires of the parent are concerned more than the actual attainment of the progeny. Gratuitous prescriptions, notions about the

occupation, interests and capacities of the offspring are built up not in terms of the nature of the offspring itself, but in terms of the desires and vagaries of the parent about herself or himself. The child is unconsciously looked on as a vicarious means for realizing the unfulfilled ambitions of the parent. Only a few men and probably no women ever realize that it is impossible to relive their lives in their offspring. All they can properly do is to encourage the latter to live their own lives according to their proper capacities. The offspring possesses its own irreducible uniqueness in its own character. By neglecting this and laying down prescriptions incompatible with it, the parents merely provide disappointment for themselves and difficulty for their children. The molding process applied to a rising generation is necessary, but it cannot be applied irrespective of the material on which it works. When it is imposed without regard to the nature of the subject—against the native grain, as it were—it results simply in frustration. The conflict thus engendered has been a current societal trait in all ages; in some cultures it has led to a complete submergence of variability in a rising generation. It must hence be reckoned among the types of conflict in human affairs which smother attainment.

17. The foregoing relations have been essentially external. Turning now to internal conflicts in the emotions it is evident that these also obstruct the realization of values. Internal conflicts ordinarily issue from and reflect external conflicts. Frequently, however, reversing the direction of this causal series, conflicts arising from external relations have as their source the internal conflicts of the individual. I.e. a human in trying to solve his own inner conflicts will try to impose his notions or prejudices on others and this sets up a new source of discord. There is, in short, an interaction between internal and external conflicts such that they are mutually causative.

18. Our concern here, however, is with the consequences not the provenience of the former. Where the desires are not integrated and unified, where subordinate impulses are not synthesized into a hierarchy of aims contributory to fundamental desires and where fundamental desires are not orientated

towards objects of timeless and engrossing value there is a clash of propulsions together with a dispersion of strivings which paralyzes the constructive activities of the organism and not only hinders attainment but, according to the intensity of the conflict, leads to all the impotence and distraction of psychological dissociation. The individual is torn this way or that or suspended on the rack of antagonistic impulses. Within his nervous responses there arises a variegation of conflicts which have to be either resolved or suppressed. Few are the emotions which do not bring a concomitant possibility of discord. There are conflicts of desire and desire, of fear and desire, and of fear and fear. In these conflicts the various accompanying emotions play active and inciting parts. The oppositions thus engendered it is true, in their diurnal rise and fall, are not completely destructive of the unity of personal striving. Their intensity, however, can reach at times, without great provocation, a point whereby they consume the nervous energy and delay or inhibit all adequate self-expression on the part of the organism.

19. Let us return now to a consideration of the struggle for existence, asking in what the ontological basis of this process consists. The struggle is not, in fact, for existence since the existence of an organism is nothing other than its non-temporal history; this history is the organism. The existence of the history can no more be effaced than a number can be effaced from the number system. It is part of the whole order of differentiation in being and is as absolute as the conclusion of a valid inference from true premises.

20. The struggle for existence, moreover, is only a part of the more pervasive struggle which exists in the interaction of strivings which constitute histories. The removal of the danger of non-existence, of the sublation of existence in the flux of actuality, no more puts a quietus on the conflict of strivings which make up living organisms than the appearance of amity between men of egoistic aggressiveness makes them less intense and crafty competitors when their interests conflict. Existence and conflict are correlated; the struggle is not only for existence but in and through existence, and, psychologically, in spite of existence.

21. A human organism is thrown into the temporal world of actuality from the world of real histories in which that actuality moves. The life which it leads is a cyclical process of illusionment and disillusionment. It is a learning process and nothing else. The actuality of an organism is its awareness and awareness is cognition and learning. The existence of a man is quite independent of his actuality but his entrance into the events of time as a fluent history is nothing other than his entrance into an awareness relation which manifests, partially, a world of particulars under the incompleteness of finite cognition and hence in instability and flux (Essay on Actuality, par. 4).

22. From infancy the human is the object of the sympathetic, the possessive or the apprehensive passions of others. In the confusion of his impressions and the active formation of his own emotional character he not only imbibes the fallacies which surrounding humans inject into him but breeds a goodly quantity for himself. Thus in adolescence and youth, both male and female tend to a romanticism, to a premature idealism, frequently fostered by those watching over them, which, although it has different results with different individuals, leads, in a predominant number of cases, to serious internal and external conflicts and culminates not seldom in tragedy. In the rush of unexamined emotions the common lot of the human is to fall, sooner or later, by his relations with others, into a disjunctive trap, which he enters without knowing it and which he spends the rest of his actual existence in working himself out of. In this way his powers may either be realized or thwarted according as chance throws him into a nexus of circumstances which is concordant or discordant with his nature and talents. Where the composition of his nature is average or standard his opportunity for tolerable adjustment is greatest. Where it is problematic and his responses varied his destiny is precarious and his chance for adjustment minimized. For as it always has been and as it always will be, average or cross-section men fill up and determine average groups and possess average ambitions, read average ambitions into others, have an average range of emotional responses, an average intellectual horizon and act in an average way according to it.

23. The hope combined with illusion engendered in the neophyte undergoes a gradient of modification as it meets a world of resistant events. The disjunctive trap makes itself felt and the organism batters its way out to what is called success or to failure. But whichever it happens to be there is equal disillusionment. Men try to close their eyes to the tragedy inherent in actuality because they cannot look at it and retain their confidence. But their wilful blindness is only a makeshift escape. It, in itself, contributes to the infelicities it tries to ignore. Those who indulge in it are like the trader who refuses to look at his books because he does not want to know the precarious state of his affairs but who, in his heart, nourishes his fear precisely because he knows, in any case, what the conditions are. Every now and then some one arises—a prophet or a reformer—who valiantly denies and sets a crushing embargo on all recognition of the virulence or callousness of the vital struggle, who prohibits any allusion to the numerous external powers which overcome men and suffuse their existence with pain. Such a man appears as a kind of savior. But the commonest facts of observation have necessarily some effect on the thinking of men. Eventually the doctrine of salvation by deliberate ignorance in all its various forms appears to be, rather than a salvation, merely an additional factor in human bondage.

24. Now we have mentioned the predicament which we have called the disjunctive trap. Since this phenomenon is one of the most prevalent in organic life it is worthy of some consideration.

By a disjunctive trap, we mean a nexus of alternatives, disjunctions, "either-or" relations, within which an organism must exist and act. Thus a soldier must either go forward and get shot or turn back and get shot; a lover must either suffer the pangs of love or undergo the pain of renunciation; a merchant must either risk his capital or forfeit his income and, in some cases, his subsistence; a politician must either control the majority or give up his office; an employee must either put up with the contumely of his master or face unemployment and possible penury for himself and his family; a child must succeed in school or endure the humiliation of being retarded. A husband and wife

who are incompatible must either suffer their irritation or undergo the disagreeableness of separation. A woman must either submit to the labors of child-birth or leave her maternal desires unsatisfied. These and a countless number of other disjunctions of greater or less stringency pervade the life of humans. They permeate the private life, the communal life and the national life. They are ubiquitous and omnipresent in organic affairs. Nations are obliged to shift for their positions among other nations or be submerged. International politics is a constant process of the forfeiting of one thing to gain something else or otherwise risking the violence and unforeseeable consequences of war. Internal politics operate in the same manner, culminating frequently in the disjunction between civil war, revolution or external war.

25. The presence of disjunction is, moreover, not confined to the life of humans. It pervades the whole biological world. Carnivorous animals are obliged to stalk and destroy their prey or succumb to extinction. Herbivorous animals are obliged to expose themselves or remain under-nourished. In the whole of animal life unremitting danger is the concomitant of existence. And all of these disjunctions, whether in other animals or in men follow with primordial necessity from the fierce, predatory and unrelenting strivings which lie at the fundament of their natures—strivings which in the case of men are not always apparent but which in the hatred of war, the animosity of feuds, the joy in kicking down the outcast, the jostling for inheritances, the *Schadenfreude* or exultation in the misfortunes of others—in these as well as in the attachments, violent sympathies which often entail violent antagonisms, in the emotions of love, and of hate, they flash with infatuated vigor into vivid and undisguised manifestation.

26. Hatred, indeed, is nothing other than the rebellion of the essential striving that constitutes an individual, against anything that thwarts its expression. It is the consequence and the manifestation of radical separatism—the assertion of private importance. It is hence woven into the psychological essence of humans. It is concomitant with the strivings that compose them and is a chief element in the bondage which prevents a man from

transcending his individuality. Its predominance and ubiquity is indicated by the constant re-iteration which men put forth with regard to its repression on the one hand, and to the duty of love on the other. Men are always being thwarted and consequently they are always hating. And although their loves may be one or few their hatreds are many and liberally dispensed. Humanity has afforded and affords no spectacle more absurd than that of the great vociferists for the religions of love hating one another with unreserved cordiality. Hate is a subtle thing and masquerades as much under the guise of its opposite as of itself. It is a painful emotion but it is not devoid of a kind of enjoyment which attaches to the indulgence of it a certain excitement and satisfaction. Thus in its prevalence it arises with ostensible spontaneity often in quite unexpected quarters. It is supposed to be correlated with injury or injustice but such a correlation is very loose and flimsy. Humans hate whether they are injured or not and where they hate they surmise injury. When men are brought straight down to the point of presenting the grounds for their hatreds such grounds generally sound so obviously personal or self-centered that they cannot be expressed without revealing their triviality or, in cases, their ludicrousness. Where such is the case it occurs often that the real and picaresque causes of the hatred are not disclosed. Grounds which appear more substantial are invented. Hate is a luxury which takes its justifications from any quarter it can find available. It is propagated by men and by women with equal zest. If, however, the hatreds of men are based generally on trivial grounds, those of women, variegated and piquant as they are, are so utterly silly as to be scarcely worth mentioning at all.

27. Now disjunctive traps—nexa of inevitable alternatives—may be promotive as well as hampering. They may force the organism to realize its powers and work its way, by the intelligence of problem-solving and the courage of risk-taking to a kind of freedom. Of promotive disjunctions, moreover, a portion are constructive. They propel the individual not only to work out a more or less satisfactory solution but to attain some element of value in the process. They may, in short, initiate in a given life-history a dialectic of progressive attainment.

28. Not a few, on the other hand, are, in their results, destructive. The external conflicts with the environment which they involve reflect themselves in poignant internal conflicts of the emotions. Where release is otherwise forbidden the conflict grows into nervous disintegration and collapse. If it continues it proceeds to insanity—the last escape from a prolonged conflict. In the darkening spectacle of this last is witnessed the successive degradation of the psychological powers of the human. The process ends and there is left as a residue a queer automaton-like body, a mere inane mocking shell of the personality which has vanished. Thus in the stress and strain of actuality, in a nervous system which is either inadequately endowed or is carried by circumstance beyond the point of normal endurance, by the half-understood sadism of others, or by the more oblivious cruelty of insensitivity—a cord snaps and the organism commits suicide or goes mad. In the world of actuality disjunction, as an incorporate character, reads itself into the conditions of life. There is, blending with the insouciant exultation of abundant health, the compensatory laughter of accumulated repression and the vapid gibberings of insanity. They are mixed together in the whole pageant of change. The first comes early; the second—and the third if it arises—await the application of pressure in the closing brackets of the vise of circumstance.

29. Thus in the series of disjunctive traps which constitute the life of the individual there is a falling off of appearance from the spectre of existence. There arises an insight into the sea of fierce emotions and relentless strivings over which reigns the mirage of superficial peace. The individual is required to, or at least does, act more according to immediate necessities and less according to preconceived standards. The process of concession commences. There is a progressive disillusionment. With the passage of time the potentialities and the opportunities of the individual contract. This contraction is accompanied by a discernment of the real nature of things to which a fanciful nature was attributed. The images which were loved, no longer fit a reality which time and events have revealed. The marks that were to be reached are not reached and if some are achieved they are found not to hold the glamor anticipated. There is a relinquish-

ment of hopes, a recognition of inevitable impotence before the flux and a hardening into the restricted habit forms of an occupation or a routine. There is a reversal of attitude from a wonder that more is not attained to a wonder that as much has been accomplished as actually has.

30. Out of this attitude, where social feelings have not been stifled, there arises a more or less well defined fear for the future. But future generations come, undergo the same purification, if such it may be called, in the fire of time and themselves fear for a future which, in essence, will be no other than the actuality they themselves have traversed.

31. In the process of disillusionment there is a recoiling at the sight which is revealed. But the lot of the human is determined by the disjunctive nexus in which he or she exists. Whether or not he recoils he must immerse himself in the spectacle before him. In the process he grasps for support or escape at the things and thoughts which seem to offer the possibility of such support and in so doing he grasps at other illusions which other men have, under various guises, set up to control or exploit him. He holds himself attached to other humans but learns sooner or later, either by a rapid intuition or a gradual revelation that such bonds are inevitably incomplete, that there is an ineffaceable residue of uniqueness and differentiation in his nature, as in that of every one, which establishes an unbridgeable gap between himself and the other particulars in the existential world which surrounds him. This gap is commonly covered over by the appearance of language, communication and reciprocal activity. But in those moments when the clouds of appearance open to reveal the distincter outlines of the existence in which he lives he sees the ineradicable absoluteness of the differentiation which divides him from all other particulars—a uniqueness in which resides at once the element of tragedy and the component of value in his existence.

32. But the emptiness and triviality of the whole striving for private immediate ends is driven home by the advent of death. Life is a learning process and death as it reflects its meaning on life is an element in establishing a discernment of both the significant and the insignificant in the biological process. It

incites a suggestion on the one hand of the immutability of intrinsic value which maintains its abode in the timeless realm of real existents projecting an immortality onto all genuine attainment in a temporal order and, on the other, of the triviality, of the specious, the partial and the incoherent in the flux of actuality. What the toughness and tenacity of the self-directed emotions blind the individual to, death illuminates, namely, the inconsequence of that to which they gave the guise of importance. Death is a beckoning and invitation to realization—to the consideration of apparent actualities in the whole of their connections. The illumination of death—the meaning and discernment which it sheds on the affairs of life, is a rendering evident of the completer relational fabric of things—a token of the unreality of actuality—a profounder realization that nothing that is, becomes extinguished—that all passing away is appearance and is nothing other than a becoming known and a passing out of knowledge. The surge and ebb of actual existence is there perpetually not as a clash of temporal sensations but as an instantaneous emanation of clustered histories. The actuality of a life is like the sound heard from a room when a door is momentarily opened and closed. This temporal actuality is the least part of the reality of that life. It is only when the individual sees the timelessness of everything that, in an ontological sense, is, that he sees both the futility and the value in his circumjacent actuality. Nature withdraws and death is only an expression of the valuational and essential reality of that which never relinquished its reality. In this sense there exists a kind of immortality—not because there is a future life, but because in the fundament of the independent the time-category of the future has no meaning. With the cognition of this timelessness there is a self-vanishing of nature in the form of the flux. Actuality reveals itself as the awakening from a dream into another dream—where everything seems substantive and absolute but where everything is dependent and evanescent. Nature like a dancing girl performs her act and leaves the stage. And in departing she draws the curtains from a casement which scans the non-temporal firmament of being. Death, as an event in time, is a final beckoner to mortals to cast their gaze and fix their attention

on the valuational meaning of that firmament. It is a suggestion to seek the timeless and nothing more.

33. The conflict of value and existence, of attainment and actuality, in a world of finite particulars admits of no ultimate or changeless resolution. It is a social problem and the problem of an advancing culture. The problem rests more than elsewhere on the leaders and governors of men. But here again a conflict arises. Not only are the governors of men handicapped by the unalterable conditions which circumstance and external social conditions place on them, but also by their own passions and their own lack of discernment. They may be dominated by good will but good will is one of the most deceptive epithets in language. Few men are so penetrating in their insight that, when engaged in the actual response-evoking turmoil of practice, they can recognize in their good will the part which they call good because it is their own desire and the part which is good because it is directed through discernment towards a non-personal value. Hence good will without discernment, interpreted through the all too easy emotion of self-righteousness into attitudes of dogmatism, and coercive interference, has led and will lead, to infinitely more valuational destructiveness than all the plain bad will that ever existed. Self-righteous men acting on noble motives without the painstaking knowledge and discernment necessary to comprehend the structure and needs of a social group are freer to do more harm and produce more utter misery than all the parasitic elements in a community taken together. They produce wars, revolutions, silly laws, taboos, repressions, persecutions; they promote superstitions, impede knowledge, cultivate conditions which lead straight to over-population and its degrading consequences, and, in short, with perfectly good will, or confessedly so, they inject during one generation more tragedy and misery, private and societal, into the lives of humans, than all the out and out evil elements in a community, such as they are, accomplish in a millenium. Good will, or at least effective will, without insight, is more dangerous than any other element obstructing the realization of value.

34. The accession of men to positions of social responsibility, however, is not altogether adapted to the enticement of the most

capable to those positions. The very intensity of personal desire and aggression which makes men force their way up through the administrative and political scale to pivotal positions does not emphasize the emotions or discipline the organism to habits which lead to essential knowledge. That it produces astuteness and a sense for the expedient is not to be denied. These are, however, feeble shadows of the knowledge and the discernment of values which are requisite correlates of the power of sovereignty. Few who go up can come out of the chrysalis of their ambition and rise above the egoism, crude or subtle, which propelled them on their way. But this is requisite. Those alone are fitted to rule to whom the power they possess adds nothing to their satisfaction and the applause which they receive from the undiscerning is looked on as a matter of precariousness rather than a matter for satisfaction. It is neither the man who wants the position most intensely, nor the man who works the hardest to attain it, but him alone who is most capable of fulfilling it with the greatest accretion to social values, namely, the values of intelligence and beauty, who is worthy of it.

35. We have said that the resolution of the conflict of value and existence is the problem of an advancing culture. The individual can do little without a surrounding culture of a promotive character and the growth of a culture is a historical process. There is in the history of peoples a dialectic of developing culture which moves with varying rapidity. A culture arises out of needs. Needs evoke discoveries and inventions; inventions evoke further needs. Needs, thus, evoke the cultivation of intelligence and intelligence, appreciation, and appreciation evokes the longing for greater intelligence. Thus a culture climbs through the events of time towards the transformation of actuality into an increasing realm of realized value. But the metaphysical preconditions of the flux are ineluctable. There is a dialectic of descending as well as of ascending social attainment. With the weakening of appreciation there is a concomitant weakening of the desire for wholeness and rationality, and a graduated passage through a succession of generations to pluralism, ignorance and discord. The apparent stability of a culture reaching out over a period of time may conceal, but does not disconfirm, the

fragility of its bases. Actuality, in sum, whether considered in regard to group or individual, although it contains the unexhausted potentiality of achievement, includes also, by the ontological necessity inherent in the separatism of its elements, the conditions which engender an incongruence, varying but perpetual, between the dominance of fact and the ascendancy of value.

VALUE AND EXPRESSION

1. By discernment in its most extensive signification we mean the cognition of value. By special kinds of discernment we mean the cognition of special values. Examples of the latter are the cognition of esthetic values, of the values of intelligibility and of hedonic values. Now there are certain propositions which can be made about discernment in general—propositions which apply equally to special kinds of discernment. In this essay we propose to discuss four topics which involve such propositions. These topics are: (1) The character of the discernment of value as a temporal process of cognition (2) the factors which determine the limits of the expression and communication of that cognition once it is attained (3) the influence which the emotional response evoked by discernment exercises on expression and (4) the nature of mysticism. Let us begin with the first topic first.

2. The cognition of value i.e. discernment, is embraced in the wider integral cognition of a thing. It is not separate from the whole knowledge of the valuable object. What we do not see at all we do not see the value in and what we do not see the value in, provided it possesses such, we do not adequately see. We cannot apprehend the beauty of a song if we do not apprehend the song and, on the other hand, if we do not recognize the beauty of the song, we do not, to that extent, adequately apprehend it. The discernment of value, as we have elsewhere pointed out (*Essay on Appreciation*, par. 11) is part of, and compresent with, a wholeness of cognition without which it is defective. We submit that this proposition follows from our previous exposition (*Essay on the Definability of Value*) that value cannot be given an essentially psychological interpretation and that it can only with adequacy be given an ontological interpretation. Since, moreover, cognition is concerned with the modifications of being, that sort of cognition cannot be whole or integral which passes over any aspects of such modifications. Any cognition, therefore, which ignores the valuational aspect

of the objects to which it is directed, is partial. It follows by way of corollary that propositions promulgated as truths by the special sciences, are, if they can be called truths, partial truths. Further: that a knower, in so far as he is interested in the truth of a thing cannot be interested exclusively in this or that aspect of it i.e. interested in a restricted set of aspects irrespective of their relations to its other attributes. He cannot, in short, be a specialist.

3. The cognition of value, to resume, is an incorporate part of complete cognition and any adequate account of it must require, and be comprehended in, an account of the latter. Now the cognition of a relational unity which constitutes an item of being is immediate and integral. If not, it is not adequate and hence not genuinely cognition. In what manner this is so, we shall presently see. The advance towards such integral cognition, however, is subject to degrees and there is a relation to be investigated between the degree of completeness in the approach to, and the advent of, an immediate, integral, rational intuition in the realization of an instance of cognition. What this relation is we may proceed to examine.

4. We have seen that the realm of being (and in this we include existence) is a coördinated unity of relational wholes. But every whole within this realm is participant in relations which cause it, as it were, to overflow its limits and enter into a continuity with the cognate system of relations in which it resides. This continuity is logical, rational and ontological; it is something not unrelated to, but entirely distinct from, physical continuity which, in so far as it is existent, is an attribute of a physical particular in an existential world. The prevalence of the latter type of relation is the subject of a problem which is proper to the science of physics and not to the more fundamental science of ontology. The fact, for example, that quanta are hypothetical items defined as physically discontinuous has nothing to do with the logico-ontological continuity of their relations. In the realm of being the logical discontinuity of every boundary, the demarcation of every whole, is partial not absolute, for an unrelated item included within other items in being is contradictory and hence impossible.

5. A whole is made up of parts, i.e. it is an organic relation of parts which as parts are embraced in the system of relations constituting the whole. Now by partiality of cognition we mean the cognition of an item not as a part in its inclusive ontological whole but as disjoined from that whole. Such cognition is partial because it omits an essential factor in the meaning of the cognized item. By completeness of cognition we mean the cognition of a whole i.e. the cognition of items as parts, together with the nexus of coördinating relations which integrates them into an ontological whole. The integral grasp of any system of relations forming a situation, such as, for example, the relations between the sun and the planets and the interrelations of the planets among themselves is an instance of completeness of cognition. That of one planet only, outside of its relations, is an instance of incomplete cognition. It is clear, however, that the cognition of no finite system is, in an absolute sense, complete, for no finite system is relationally discontinuous with the rest of being.

6. Now relational wholes, from infinitesimal particulars to progressively larger wholes, maintain their being within inclusive wholes. Complete cognition, however, is the cognition of the internal and external relations of a whole which mark it off as a whole. The cognition of a whole involves the cognition of its parts and hence of its parts as parts. The realm of being is an infinite series of progressively inclusive relational wholes. But every whole constitutes the possible object for an instance of complete cognition. There is, hence, a corresponding series of integral levels of cognition. The advance of thought is the passage of cognition from one integral level to another. In what manner this advance takes place we shall see more explicitly in the following essay. We may, however, here investigate certain essential characteristics of it.

7. The process of the amplification of cognition is not merely one of summation but is also one of organization. There is a preparatory approach to a cognitional level which involves the colligating apprehension of subordinate propositions and of minor wholes. This preparatory process is an accumulative propædæutic, which, however, does not consist in a gradual awaken-

ing of the subject to the awareness of a cognitional level. On the contrary, while the approach is cumulative, the cumulation is not unified but is constituted of disparate instances of cognition. The reason for this we shall presently see. A level of cognition cannot be reached until every essential part of it is reached for the lacuna produced by the absence of any requisite part sublates the manifestation and the cognition of the whole. The separate instances of preparatory cognition are, with respect to the level to which they lead, incomplete, and as long as any element necessary to the total structure is wanting this incompleteness cannot be overcome. The appearance which results is a congeries of discrete items making a structureless aggregate. There is, however, a moment as the process advances when the integrative thought reaches and envisages the essential parts of the cognitional level under consideration and the separated parts, passing over the threshold of logical vision, are grasped in one synoptic insight as a unity and relational whole. This insight is an illumination, an *Aufblitz*, an instantaneous intuition into the essential relational structure of the complete cognitional level. It is immediate, sudden and in a sense timeless—just as the first appearance of a ship over the horizon, or a star as it surmounts the skyline and enters initially into the range of vision. It is something that is attained *per saltum* as the last step of the propædæutic process is reached and the relations which it carries, and which constitute the lacuna preventing the completed view, are incorporated into the whole. The cognition of any system of relations i.e. of any relational whole, is simultaneously complete and immediate. As soon as it is complete it is immediate and it does not exist at all until it is complete. This point is essential, but it is very easy to misunderstand. The gradual approach to the synoptic insight into a cognitional level is not to be confused with, or considered, a gradual emergence of the insight. The latter is not realized by degrees but integrally and immediately. It is not an insight at all until every relation necessary to it is brought under the scope of cognition and then it is instantaneous.

8. Thus the passage from one cognitional level to another proceeds, by periods, from the formative accumulation of minor

instances of cognition to the globular insight revealing a different and more inclusive whole. This whole, in turn, forms a new basis from which the accumulative process operates in its further advance. And in this manner the thought of men may proceed from one level of cognition to a superior and more inclusive level passing on through the ascending series of relational wholes comprehended within the entire differentiation in the realm of being.

9. We have seen, however, that cognition and discernment are compresent and mutually inclusive. Discernment is a species of cognition and is part of the process resultant in a synoptic insight. The apprehension of a cognitional level involves, as an incorporate part, the discernment of the value-meaning in that level and without this the whole insight is precluded. There are, therefore, correlative to the levels of the cognition of being, levels of the discernment of value and it becomes clear that the extension of the intellectual vision and the amplification of valuational appreciation are complementary attributes of a single intuitive process. It follows that, just as completeness and immediacy are concomitant in the cognition of other ontological categories, they are concomitant in the cognition of value. Such cognition comes as an insight in accordance with the process we have just described; a process to the further exposition of which let us now return.

10. We have said that when the implicative relations of the essential forms which constitute a relational whole are envisaged the whole is forthwith envisaged. Now these relations are represented by propositions and when thinking is in terms of propositions they are rendered manifest by the colligating of the latter i.e. of the propositions. In case, however, any proposition essential to a whole is not manifest, the whole is not accessible to knowledge and the cognition of it must await the discovery of the critical but missing proposition. Obviously if more than one proposition is lacking the completeness of the cognition is, to that degree, more deficient. We shall consider such critical missing propositions, in case there is more than one, as one, in the same manner that the causes of an event, though many, may be taken together as one. Now the critical missing proposition

(whichever it may be for any subject) we shall call the perlustrative proposition, for it is the consummating factor necessary for the intuition of the whole. The discovery of such a proposition is vital to the cognitive process and it depends on the genius and suggestibility of the knower far more than on his critical powers or on his capabilities in formal logic. The lack of such suggestibility is tantamount to a waiver of constructive thinking. Without the flash of suggestion, acquired information lies inert as desultory erudition and does not unite itself into a whole of rational understanding. The power of suggestibility, however, is a faculty subject to degree and few are wholly devoid of it. Any suggestion from without or within may ignite the indispensable thought impregnate with the perlustrative proposition, which welds together into one synoptic insight, a collection of minor intuitions. The suggestion which does so will vary, on the one hand, according to the nature and mnemonic associations of the knower and on the other, according to the particular proposition or propositions which are required.

11. Now a proposition undiscovered but indispensable to a synoptic insight is, like other propositions, an instance of predication. The cognition of the reference-content of such predication is a concept. The concept thus implicit in a critical proposition we shall call a perlustrative concept. It is the necessity of attaining such concepts that lies at the basis of Aristotle's untiring insistence, in the *Posterior Analytics*, on the thesis that the erection of the structure of knowledge is dependent on the discovery of middle terms. The middle term is, for the most part, the perlustrating concept of a syllogism—the term which, when properly combined with the major and minor, gives an instantaneous insight into the implication present. In the case of a sorites, again, the absence of any term is sufficient to render it defective but the middle terms are the combining elements and the absence of one middle term interrupts the deductive continuity of the whole. When the balance of the sorites is known and but one term is missing the discovery of that term and its relations instantaneously illuminates the inferential unity of the whole. That knowledge is built on the discovery of middle terms is a technical and precise way of saying that the generation of

synoptic insights or logical intuitions is the process of the discovery of perlustrating concepts that raise, at one stroke, a unitary nexus of ontological relations into the field of rational vision.

12. As we have pointed out this rational vision requires two complementary processes, namely, the approach to, and the actual attainment of, a synoptic intuition. The approach involves one sort of cognition, namely, graduated, analytical and cumulative cognition. This species is necessary but is, for the most part, derivative in value and secondary. The attainment of the culminating intuition, on the other hand, involves another sort of cognition—a cognition which is not graduated but integral, not analytical but synthetic and not cumulative but immediate. This species of cognition is the end and consummation of the former. Its value is intrinsic and its significance primary. The knower is like one climbing a hill. As soon as the level of sight clears the crest, but not an instant before, the whole view springs into vision. Though he has been approaching without cessation successive elevations, the periscopic moment does not arrive until the summit is reached. The last step, the step which lifts the eye over the opaque barrier of the hill is, in the process of knowledge, the discovery of the perlustrating concept.

13. It is evident from what we have said that the synthetic insight, in primary cognition, to which we refer is an immediate illumination. It is not, however, for this reason, something remote and mysterious. It is, on the other hand, what all men capable of making inferences experience constantly in greater or less degree. But, like other powers, it is subject to wide variations in completeness and attainment. It finds many examples in common life. If a man shows the symptoms of sickness and a typhoid bacillus is discovered in his blood it makes immediately intelligible a whole nexus of facts otherwise disconnected. If a man, again, is discovered to have particular skill in a game and it is discovered that his eye-muscle coördination is five times as accurate as that of the average, it is clear at once from whence issue the facts which evidence his skill. If a jury gives an unjust decision for a plaintiff and it is found that members of the jury have experienced events similar to those involved in the case,

the presence of this knowledge throws immediate light on the causes which led to the verdict. If an error is made in the solution of a mathematical problem and persistent efforts to solve the problem fail, the indication of the nature and position of the error clarifies at one stroke the whole solution. If we observe the faint circle of light conjoined to the crescent of the moon when it is in a quarter phase the fact may seem anomalous. If we learn, in addition, that the moon receives light reflected from the earth the relations involved are at once manifest. These examples are but passing suggestions of the multitude of them which are constantly occurring. Their scope, moreover, is restricted to matter of fact and it will not be profitless to consider a few examples from the field of thought itself.

14. If a learner studying geometry reads at random many theorems whose demonstrations require the equating of angles before he understands thoroughly Euclid's 29th Theorem with regard to alternate, interior angles, he will find that these demonstrations involve premises with which he is not acquainted and are, hence, for him, incomplete. When, however, he has mastered this theorem not only will he apprehend immediately a theorem fundamental to the others, giving the sum of the angles of a triangle, but with one comprehensive intuition, the coherence of all the other demonstrations of the class indicated. He will be able not only to understand these but also the theorems concerning the angles inscribed within a circle and will have, thus, the basis for an insight into the trigonometric functions of angles together with their many applications. The theorem concerning alternate, interior angles will, in this case, be the perλούstrating proposition which consolidates a scattered array of pieces into an integral structure. In case, for any reason, this theorem is not, or cannot be grasped, the pieces will remain separate. They will persist indefinitely in the notions of the learner as an unconnected multitude and not as a cosmos. Geometry is a subject where synoptic rational intuition is immediate and precise or else non-existent. It illustrates par excellence the passage of secondary into primary cognition. It was no doubt by some such synoptic insight that Pythagoras (or whoever it was who discovered it) divined the demonstration and something of the

far-reaching significance of the theorem which bears his name.

15. We are well acquainted with the immediacy of the illumination whereby Archimedes saw into the relations which constitute buoyancy. The events of this thinker's life, indeed, such as we know them offer considerable grounds for meditation concerning the character of scientific discovery. It is a significant thing that a single man appears suddenly, who by a series of insights, makes a succession of discoveries on subject-matter previously intractable and contemporaneously unsolved. Such an eventuation, however, is not uncommon in the history of thought. The discoveries brought forth, no doubt, do not represent the work simply of the one man but rather that of the whole culture, which, developing and accumulating the store of data and of special propositions, brought them up to a point of generative fecundity. But the individual thinker receptive to suggestion apprehends and coördinates the perlustrating concepts necessary to precipitate the insights within which the discoveries are embraced. And in this manner a single individual highly susceptible to suggestion may bring forth an abundance of discoveries which others strive in vain to attain. Archimedes' remark concerning the lever shows that he had a clear insight into the relations of force, power and work which apply to that instrument. We may further observe that at his death he was working on the problem (using the method of exhaustions) of the area bounded by a parabola and a line perpendicular to its axis. Had he come upon the notion of the differential it, no doubt, would have acted as a perlustrating concept calling forth the cognition of the derivative and the integral and thus bringing calculus within the range of human knowledge during ancient times.

16. The things that we have said about Archimedes apply equally to others. Descartes, concerned with the project of representing mathematical variables by linear coördinates, divined the fundamental relations of analytic geometry. Newton's discovery of the applicability of the inverse square law is well-known; likewise the insight that flashed into the thought of Römer when he saw that the speed of light could be measured by comparing the lengths of time required for an eclipse of a

satellite of Jupiter by the planet itself, the data being derived from the planet at the appropriate points in its orbit when it was farthest from and nearest to the earth.

17. These examples are instances of the apprehension of a nexus of relations arising by suggestive synthesis from an immediate intuition of the connectedness of such relations. They are drawn from observations directed towards the physical world or from the world of mathematical relations but the same sort of insight is operative in the cognition of values and the relations in which value manifests itself. There are few who have not, in the process of familiarization with a locality, a work of art, a piece of music, seen with a sudden integrative grasp a complex of relations previously unrecognized and become from that moment on attentive to the beauty of the thing. When the perceiver is given the opportunity of repeated or intermittent perception the integrative process goes on in the intervals more or less outside of awareness, and when subsequently the moment of perception arrives the valuational meaning of the whole silently but instantaneously springs into cognition. There may be a process of cumulative impression but it differs and is distinct from the culminating intuition. The instant the last brick is put on a house, the house looms before the eye completed; the instant the last concept is incorporated into a cognitional process the process explodes, as it were, into a synoptic insight. The difference, however, between the process of physical building and that of psychological synthesis lies in the fact that in the former the unity appears to be realized by gradual accretion, whereas in the latter the elements are comparatively disjoined and mutually irrelevant until the uniting insight gives them coördination.

18. Many of the examples we have used are taken from science. They are adapted to illustrate the point because of their precision. The cognition of value, however, is not subject to the definiteness and, in some cases, the finality, which these examples indicate but the process embodies the same essential character, namely, the synoptic insight into a system of interconnected relations. This character is common to adequate cognition whatever the subject-matter to which it is directed, may be. Whether it be an awareness of physical, rational or esthetic relations, the final

insight is an immediate, integral apprehension which comprehends the relational nexus as a whole. Whether the process occurs in the conception of the artist, in the discernment of the appreciator or in the cognition of the scientist, the attributes of unity and immediacy are present in discovery.

19. Since, to continue, the topic concerned with the relation between completeness and immediacy on the one hand, and discernment on the other, in the processes of cognition, is highly interesting for its own sake, we shall not abandon the investigation of it even though it leads somewhat out of the direct path of our study. We do not aim in these essays to pursue an inflexible method or a rigid schematism, nor do we believe that attitude most productive which emphasizes conclusions at the expense of inquiry. Conclusions are fruits which, as we have seen, mature and ripen of their own accord and are not to be plucked before they have attained an ample and natural growth. The fluttery haste which cannot brook a circumambient and radial approach to a subject is not, in fact, motivated by a desire for wholeness of vision but rather by a childish urge for incoherent activity—action for action's sake. Let us return, however, to the subject we had in mind, namely, the consideration of the consequences for human thought arising from the interrelation of completeness and immediacy in the process of cognition.

20. Since the realm of being is an order of relational wholes and completeness of cognition consists in the integral grasp of such a relational whole, thought advances through levels of cognition which become progressively more inclusive in their range and more explicit in their detail. The grasp of a relational whole, however, occurs by a synoptic insight the nature of which we have endeavored to indicate. Now such an insight is ignited, as it were, when all essential minor intuitions have been attained and not previously. It follows that if any proposition or elementary intuition is lacking, or is, owing to circumstance or native endowment, beyond the scope of the individual's grasp, then the whole insight is beyond his grasp. The significance of this is hard to over-estimate. Men cannot see things by a short-cut route. They can see that and only that which they are pre-

pared to see. The absence of relevant minor intuitions and of the knowledge of their corresponding propositions obstructs all synthetic comprehension. The relational whole which would otherwise be the content of the insight must continue to appear under these circumstances—like the unconnected fragments of a shattered piece of sculpture—a desultory plurality.

21. Now as we have said (Essay on Relation, par. 47) genius is the developed capacity to intuit relations. The attainment of a vast synoptic insight integrating a whole domain of relations is a work of genius e.g. the discovery of the elliptical orbits of the planets. Where, moreover, the subject matter, on account of its extent and intricacy, is such that its unity is not apprehendable by lesser vision, the advancement of thought must await the insight of genius. Where this is not the case, however, genius is not an indispensable, but is nevertheless a highly accelerating factor. Discovery is the result of accumulated and organized detail. This fact is important since, among other reasons, it furnishes a basis for the great expository value of the historical approach to a point of view. In understanding the antecedent history of an actual situation or of a theory we gain an intimacy with it and an insight into its *raison d'être* not otherwise obtainable. The grounds for this are not far to seek. A proper historical exposition shows, and in a way repeats, the succession of facts and intuitions which accumulated towards and evoked the consummatory insight. The psychological effect of this repetition on the learner is not wholly unlike that of the original process on the investigators. It is a resuscitation of the cognitive synthesis as it initially occurred.

22. Discovery, we have said, is the result of accumulated and organized detail. Within a range of examined items, when a certain point of knowledge is reached discovery becomes generally imminent; it awaits only the acquisition of a final per-lustrative concept to bring it into manifestation. It is then likely to occur, as many discoveries do occur, concomitantly in several different places. Thus in many subordinate branches of knowledge the higher the culture the greater the possibility of a steady advance of thought without the accelerating presence of genius. In such cases exceptional capacities though valuable cease to

be indispensable. There are relational orders, however, for the cognition of which genius is practically indispensable since lesser intellectual capacity possesses neither the power of fixation, the power of absorption nor the power of integrative insight necessary to precipitate a unified vision of them. Genius is here, if not completely indispensable, at least necessary, for anything but the most restricted and sluggish progress. With regard to this matter it is to be observed, in addition, that the conditions of scientific differ from those of esthetic cognition. Genius is valuable in both, but quite indispensable in the latter. It is possible that calculus, the binomial theorem, and the inverse square law would have been discovered had Newton not lived—it is practically certain that *The Divine Comedy* would never have been realized without Dante nor *The Tragedy of Hamlet* without Shakespeare.

23. It follows, in addition, from the nature of the process of cognition that insight is ultimately an affair of the individual. Collaboration, where one man knows a part and another man knows a part can never produce a synoptic insight. To attain such an integrative intuition all of the elements must be within the cognition of the individual, synthesizing mind or else they will never coalesce into a unit. What A knows will never help B to a unified insight unless it becomes also a part of B's intellectual equipment. Several individuals may concur in the same view but a synoptic insight, as such, can only come to an individual and not to a group. It would be unnecessary to point this out were not the age one of fanaticism for organization and an apotheosis of administration in which collaboration is supposed to possess a kind of magical potency in affairs of knowledge. Collaboration is highly valuable with respect to the accumulation of secondary knowledge; it is often worse than useless with respect to crowning insights for it can interfere with and deflect them. And in some cases where it is employed through tacit administrative coercion, as a means whereby sterile minds can shine in a reflected glory, it is dissimulative and trivial.

24. Before leaving this subject, namely, the nature of the process of cognition, a further topic appears which demands consideration. It is sometimes said that any knowledge, and,

in particular, unified knowledge, is impossible because the mass of facts is infinite and it is not possible to know an infinity of facts. Thought, according to the position referred to, must hover between opinion and error.

25. Now, that men do not know everything and never will know everything requires no prolonged demonstration. But the futility of the effort for valid knowledge implied in the above thesis, although it may have a superficial plausibility, overlooks certain primary attributes of the nature of knowledge and of the process of cognition. It is true that we cannot know all propositions and their meanings. But every proposition in a rational order (and that propositions exist in a rational order we shall see in another place) has a status peculiar to itself. In the vast range of true propositions, moreover, the respective significance of each differs from that of others. There are some propositions which, with respect to the nexus of relations in which they exist, are strategic. I.e. they are propositions on which subsidiary propositions depend and from which they follow e.g. in geometry one can cite the Pythagorean theorem or in calculus the theorems on limits. Strategic propositions order and colligate the realms in which they have their being. They are often identical with perlustrative propositions the nature of which we have discussed above. Now while the collective mass of true propositions with respect to any universe of discourse is beyond the range of complete cognition the relatively few strategic propositions are not beyond this range and it is the knowledge of these which, on the one hand, is fundamental for the envisagement of the field of relations involved, and on the other, contains the awareness which generates a synoptic insight into the structure of the entire realm. Thus in geometry the understanding of a few strategic propositions unifies and clarifies the whole field. While we cannot know all the facts and all the sequent propositions which are commanded by these strategic propositions we can know from our knowledge of the latter the limitations of differentiation within which those facts and propositions exist. These conditions apply to the knowledge of the realm of being as well as to that of all subordinate and included realms. It is the concern of philosophy to discover the strategic

propositions which integrate that realm, and, in so far as possible, to render explicit their significance. Any assertion about the nature and limits of knowledge, before this is done, amounts to a *petitio principii* because it assumes conclusions about a field to be investigated before the investigation begins and subsequently professes to demonstrate them. Knowledge does not signify omniscience but, rather, the possession of essential meanings.

26. In the foregoing discussion it has been our object to show that the discernment of value is a species of cognition and as such is subject to the characteristic conditions imposed on awareness by the process of cognition. It is, in short, determined by the accumulation of minor intuitions coupled with the attainment of an immediate apprehension or insight. The discernment of value differs, however, from the cognition of some other relations e.g. mathematical relations, in that it does not possess the apodictic validity attaching to such cognition. Within a certain range, nevertheless, its intuitions are significantly clear.

27. Now the cognition of value tends to give rise to a demand for the expression and communication of the content which it reveals. There is a physiological aspect of the process of knowing. It involves an afferent nervous impulse which finds its way through the association centers of the brain to the motor nerves and results, according to the interests of the subject, in some form of activity and expression. This expression, in order to be adequate, has to resolve certain exigencies arising from the nature of discernment, the nature of value and the character of the emotional response of the subject.

28. In the first place the discernment of the nexus of relations wherein the value of a thing resides, even though it requires a considerable preparation, occurs, as we have seen, as an integrative insight. This insight possesses the characters of unity, wholeness and immediacy. But the communication and description i.e. the expression of the insight, is of a different nature. The problem is evoked of expressing in words or in some other particularized medium the nature of an intuition which is uni-

tary and complete. Now expression by parts is divided and successive and is hence not correspondent to the unity and immediacy of the cognition which comprises its content. It is difficult to express in a piece-meal fashion, and at the same time retain its essential character, that which springs up instantaneously as a synthetic insight. Volumes in some instances would be required to express the organic unity of relations coördinated in one act of cognition. The manner in which the difficulty is resolved, if it is resolved, varies in different instances of expression. There always remains, to some degree nevertheless, in the expression which endeavors to describe or communicate the results of valuational discernment, the constant exigency, the conflict, between the immediacy and unity of the insight, on the one hand, and the unavoidable extension and division of expression on the other. It is never possible to express all at once that which exists and arises in the awareness, all at once. The elements of an insight are simultaneous; those of expression inevitably discursive. And the immediacy of the one has to be reflected in the consecutiveness of the other. But in so far as expression can approach by the suggestiveness of its form, the integral unity of its content, it becomes successful. Thus frequently a single word, a phrase or a gesture chosen with an acute sense for its suggestive aptness will effect an immediate insight which can be obtained only with difficulty by the explicit but lengthy enumeration of detail.

29. Associated with this conflict originating from the discrepancy between immediacy of discernment and successiveness of expression is a further exigency arising from the character of value itself. Value is intrinsic or derivative. Instances of intrinsic value we speak of as intrinsic values. Intrinsic values are subsidiary or ultimate i.e. they fall into species which are referable to a primary and non-reducible value. Hedonic values, for example, or instances of pleasure, derive their value from the nature of pleasure, the intrinsic value of which is final and not reducible to some other species of value—and so on for the variety of other kinds of value. The expression or description, thus, of all instances of intrinsic value, after indicating their specific differences, is led to an irreducible value which cannot

itself be given qualifiers but which can only be denoted. Thus the description of all subsidiary values rests on the reference of them to primary values which, however, cannot be described, since the cognition which apprehends them is immediate and unique like that, for example, of the color red (or any other color) for which language can only furnish single words of denotative character. It is possible to describe one thing in terms of another and that other in terms of another and so on successively but eventually something has to be reached which is immediately known or else all the steps of the description remain unintelligible. In the description of values, such immediately known items in terms of which other values are described are the primary intrinsic values i.e. intrinsic values that cannot be reduced to, or considered as species of, one another. The denotative words employed to represent these, however, (for example; pleasure, love, beauty, unity, consistency) have always been felt to be singularly insufficient as a means of expression for the content they are taken to symbolize. In the employment of them a considerable range of meaning dwindles down to a blank monosyllable or polysyllable which ignores all differentiation and may have the most divergent associations for different temperaments. The words may denote, but they do not suggest, the scope of significance which lies within the concepts to which they refer. There is a literalness and colorlessness about them which sterilizes them of expressiveness and makes them, in their bald isolation, quite incongruent, in descriptive power, with the intention of meaning they are taken to comprehend. Direct expression of intrinsic values which employs language, is of necessity indicative rather than interpretive. It can only point to that which possesses the value, or to the value in it, and is dependent for further effectiveness on the immediate apprehension of the perceiving subject. Thus in the direct and explicit expression of primary values a human is brought to certain ultimate names corresponding to ultimate values. These names, however, are not adequate to render vivid the meaning embraced within the value which they denote. The speaker, therefore, in referring to experiences which have involved the discernment of primary value feels more than ordinarily the privacy of his world. He feels the

essential ineffectiveness of much that has the appearance of true communication and recognizes in his longing for expression and in the difficulties of significant representation which it meets, the insurmountableness of the separation, the absoluteness of the differences, which, running through the throng of particular things, marks him off as one of them. The desire to overcome this isolation gives rise to many forms of non-literal utterance.

30. Now the exigencies which we have indicated, namely, the discrepancy between the unity and immediacy of cognition, on the one hand, and the extensional and successive nature of expression on the other, and the inadequacy of our monomials to express ultimate intrinsic values—these together with the feeling of isolation engendered by incommunicability and the longing for union with others through the transcendence of it, are conjoined with factors in the nature of the sentient subject which have additional determining influence on the conditions and character of expression. The cognition of value, whether in the values of pleasure, beauty or rationality comes as an insight. But like all organic processes it is not independent of the other activities occurring within the organism. There is a release of energy which constitutes emotion. The emotions arising from the discernment of value are active and varied but, as we have seen (Essay on Appreciation, par. 20) they order themselves around impulses and motives which, arising from an attentiveness that passes into wonder and a wonder that passes into admiration, increase into an active desire to possess and enlarge the value. These emotions are primary but they are associated, since humans are social animals, with consequent and subsidiary emotions which are directed to the participation with others in the discernment of the value. There is, for an organism conditioned from infancy in its nervous responses to a surrounding social environment, a heightened pleasure derived from the emotional release effected by the sharing of the experience. This response may be, it is true, combined with other socially determined emotions such as ambition, desire for influence, self-projection through the spreading of one's opinion and cognate feelings. All of these emotions, however, according to their prevalence and intensities, kindle and augment the desire for communication and

for reciprocal participation. They set up an internal pressure for expression which, according to the temperament of the subject, increases to greater and greater intensity passing into a restlessness and a longing for release which finally comes to pervade and dominate the conduct of the individual. This heightened pressure for expression meets, however, the obstructive exigencies in the communication of value-discernment to which we have previously referred. As a result there is a giving up, a relinquishment, of the endeavor for literal expression and a resort to an array of indirect and suggestive means involving tropes, figures, similes, myths, allusions, exaggerations, metaphors and paradoxes. There arises a cleavage between the literal and the suggestive in language, an opposition between the imaginative and the factual—a breach, in short, between what have been misleadingly called realism and poetry. The poetry, however, is, in terms of the content it endeavors to express, as real as the realism. There is a common fallacy of the literal-minded which we shall call the error of inept exactness which confuses language expressing the facts of value with language expressing the facts of existence *per se*. It is not possible for the revealer of value to be literal, and the criticisms of poetry and of the figurative expressions contained therein as being "impossible" or "untrue" are for the most part simply misplaced. There arises, in the expression of values, a world of symbolism and of intimation which is not concerned with the descriptive parallelism between fact and language, but rather with the suggestive power of words to awaken intuitions and insights. Wherever the attempt is made to convey the meaning of experienced values in common means of communication such expression is practically certain to arise. That it is prone to bring forth, in some quarters, grotesque and puerile misconceptions, as in the interpretation of many of the dogmas of popular religion there is little occasion for doubt. But the exigency is inherent in the difficulties of expression itself whenever its subject-matter is concerned with value and its sublation is, at best, never complete.

31. The presence of emotion makes expression imperative but the nature of value is ultimately inexpressible—it can only

be indicated. Thus, as we have seen, a conflict is set up resulting in more or less successful and more or less deficient expressional attempts. The most successful endeavors to transcend this conflict are found in the great works of science, philosophy and art which the race has been able to produce. The conflict grows less as language and the varied means of expression develop concomitantly with the development of a culture, but it lies too deeply in the essence of the thing expressed and in the expressing organism ever to be more than partially overcome. It varies, however, with the nature of the values expressed. Common instances of value are commonly discerned and are hence more readily communicable because they can easily be pointed to or indicated. More extraordinary instances of value meet with no such advantages. Their expression requires active suggestion. The subject, under the pressure of emotion, in order to attain an expression of value discerned, resorts to two expedients not always promotive of clarity but sometimes auxiliary to descriptive effectiveness. He ignores consistency, on the one hand, and supplants it by a luxuriance of analogy and figure which is not always coherent and, on the other, employs particularization or personification. Since men are accustomed to particulars and to the perception of them, such particulars, such concrete items, possess a range of suggestive power not, as a rule, operative in the more general forms of being. But these two expedients, like others, fall short of success in the higher reaches of value. The rarer instances of value-discernment such as those of the intellect in the most extended range of its vision, are progressively less communicable because the cognition of them is less common. In order to see the nature of being it is necessary to climb the ladder of logic—there is no jump in discernment. But as one ascends this ladder the things that fall under the vision and the order of rational meaning with which they are charged, are less and less communicable and lie far outside the descriptive scope of colloquial language or the reference-content of its words. It is here that the learner throws aside the bonds of literalness and employs an oracular freedom of expression which abandons the graduated consistency of reason and soars far above the meticulous language of empirical fact. Such expression neither ex-

pounds nor demonstrates, it proves nothing and endeavors to prove nothing. It points to, indicates, reveals by flashes and awakens by imaginative intimations a suggestion of the power of the synoptic insight which comprehends the timeless order of value in the realm of ontological relations and it invites to the discipline of similar cognition those who apprehend something of the purport of the expression but not its source. There is, however, in such expression a suggestion of mysticism and hence we shall turn to a consideration of the character of that attitude.

32. The phenomenon of mysticism arises out of the opposition between the discernment of value and the embodiment of that discernment in language i.e. out of the conflict of value and expression. It is not a system of thought, nor a special philosophy, but a mode of expression. Mysticism is a predicament; it is the unremittent endeavor, in the face of the knowledge that the endeavor can never wholly succeed, to utter the unutterable. The mystic is engaged in process—which he can neither give up nor accomplish—of giving expression to a discernment, to a vision, which by its nature is ultimately insusceptible of expression. The philosophic mystic is put to greater disadvantages in this respect than others. The concept of an ultimate integrated, rational being, of a vision comprehending this being and the esthetic power of its rational relations; the concepts of differentiation, emanation, return, absorption and ultimate union; the concepts of the finality and ubiquity of the meaning of the independent, of the sublation of individuality through knowledge—these can be pointed to only; they lie quite outside the range of adequate expression.

33. Now mysticism and mysteriousness though commonly associated are, in fact, opposites. Mystery is a species of ignorance; mysticism of clear vision. Where the one is present the other is absent. Where there is ignorance there is nothing to express and no conflict of discernment and expression. It is only where the discernment of value arises that mysticism arises. Wherever there is lack of correspondence between the referred

to and the uttered, mysticism is present. The mystic, for example, is forever obliged to talk about the timeless in language which is wrapped in the relations of time. It is said that some philosophies are mystical and some are not. But, in a proper sense, all philosophy is a form of mysticism—a suggestion of that which can never be completely expressed. In truth, however, not only philosophy but all expression whatsoever, contains an element of mysticism—science, art, daily language—for all of these refer, in their expression, to that which is, but which, in truth, eludes expression.

34. It remains, in conclusion, to point out that there is a concordance between rationalism and mysticism such that mysticism is merely an anthropomorphic aspect of rationalism. The former refers to ontological structure, the latter to human expression. Mysticism is a product of particularization and of time. The mystic is in the position of the physicist who is obliged to give a picturable representation of a four dimensional world in a three dimensional continuum. Mystical expression thus is not a consequence of the nature of things but of the nature of man as a temporal particular. Rationalism in its highest discernment can only be mystical in its expression and mysticism can only be significant when its content is rational—in fact, there is no such thing as an irrational content. A proposition demonstrated to be contradictory to fact or to other valid propositions has no place in any rational philosophy whether it is called mystical or not. But the special sphere of the mystic, the domain which more than others motivates his expression and contains the barriers which that expression endeavors to transcend is the realm of values. It is in the expression of value-revealing intuitions that mysticism finds the recurrent necessity and the rationale of its being.

THE INTRINSIC VALUE OF INTELLECT

1. Since in the present essay we shall consider three cognate subjects we shall divide our inquiry into as many parts. The first will treat of rationality, the second of mind and the third of the value of mind. In the first part we shall show (1) that a thing has a rational form (2) that the interconnection of rational forms is one with the interconnection of things; in the second, that the mind is a system of rational relations and that there is only one mind; in the third that mind is the source and bearer of intrinsic values.

2. Now there are two kinds of exposition: exposition by indication and exposition by demonstration. The former elucidates a subject by making it the object of reference, the latter by making it the conclusion of an inference. The former has the validity of immediate tuition only, the latter of mediated consequence. There are some things which are subject to both, some which are subject to one only, and some which are subject to the other. Hence if a thing is not susceptible to demonstration it is not, therefore, necessarily excluded from indication. A particular fact, for example may not be reached by deductive thinking; it may nevertheless be denotable. Now it is clear that the rationality of being is presupposed in any demonstration concerned with instances of it and hence is not a valid subject for demonstration. It is not, however, any the less a subject for description and indication. In a like manner an indefinable item e.g. any specific color, is not, because it is indefinable, undenotable. This difference between indication and demonstration must be clearly discerned and observed. Indication may be made to *seem* like demonstration. In this case it produces apparent proofs which, as such, are invalid and are worse than none at all. It may be asserted, for example, that one part of being, which is experienced, is rational, and that another part of being which is experienced is rational and so on to all experienced parts of being. From this it may be affirmed that being itself is ra-

tional. This is the so-called empirical demonstration of rationality. It is worthless, misleading and specious and did not itself arise in the rational tradition of philosophy. It involves the inference that because an experienced part of being is rational, therefore, the rest is rational. But in making this inference it presupposes the universal validity of the rationality which it proposes to substantiate (otherwise the inference would have no ontological significance) and amounts to a somewhat thinly concealed *petitio principii*. Our object here, however, is not to demonstrate, either a priori or a posteriori, the validity of rationality but to indicate its nature. We are not concerned in showing *that* rationality is, but what it is.

I

3. The word *thing* although it refers to a needful concept is ambiguous. It may mean a particular thing, or a physical object, or anything whatsoever. It carries with it the lingering suggestion of material substance even though it is not employed with that connotation. The word, however, though general in its meaning, must, to be made an adequate instrument of thought, obtain some definitional precision. In this essay we shall mean by a thing any existential item, actual or possible.

4. A thing we have seen is a system of relations. The relations which constitute a thing are dependent on other relations (Essay on Dependence, par. 4). The relations on which they are dependent we call superior because they are logically prior to the relations of the thing. It follows, on the one hand, that no thing is isolated, on the other, that all differences involved in a thing are contained in its system of relations. This system, as we have said, is logically dependent on prior relations and hence the relations included in it are comprehended in the implication of any superior system. Now implication is a logical relation and it is universally pervasive. The system of relations which constitutes the thing and includes all its differentiation, therefore, is reticulated by a configuration of logical relations which embraces the thing and every subordinate relation in it.

5. This configuration of implicative relations is a rational form. The rational form penetrates every aspect of the thing. An aspect of a thing is a species of difference compatible with and involved in, any individualized manifestation of the essence of the thing. The system of relations constituting the thing involves a plurality of consentaneous aspects and the relational form which is at once all of these aspects (whether logical, or physical or other species of aspect) is the thing. It is that which contains the whole differentiation characteristic of it and which is externalized or appears in any temporal manifestation of it. We say, for example, that the morning star and the evening star are the same; more accurately the morning star is one, and the evening star is another aspect, of the same star and the star is the rational relational whole which determines every aspect of it, temporal or otherwise.

6. It is essential to discern the character of the logico-relational nexus of formal differences which constitutes the thing and embraces all its aspects. Such understanding alone can show the meaning of the thing as a unit in an implicative order and provide the knowledge that a thing is never either a single aspect or a perception and only that. Whatever an aspect is, it is an aspect of something, and that of which it is an aspect is a fundament of relations. Whatever the thing is, it is a relational whole and its temporal manifestations are severalized aspects of it.

7. This bond between essence and aspect is not something occult and recondite. It is immediately cognizable and in many cases so clear that it is taken as a matter of course. Thus a circle is the expression of its equation, a pyramid a system of triangulation and nothing else. An ellipse or an ellipsoid are readily distinguishable relational forms. The algebraic expressions of these geometrical figures reveal them at once as rational structures. The same contextual type of relational character, however, is expressed in any department of being or existence. An electron is likewise such a relational system; and also an atom or a world composed of the juxtaposition of atoms. Thus a solid is a system of relations depending for its stability on intermolecular forces; a liquid another depending on an unstable equilibrium of forces and, where it is exposed, on surface

tension; and needless to say a gas is another. A light spectrum is an order of differences and the waves of which it is composed are expressed in the well known formula for periodic motion. Again the earth is a relational system of physical phenomena and also the whole system of geological modifications which it possesses: an ocean, for example, or the shoreline of an ocean. A shoreline is, in fact, nothing but a system of equations tossed up by the waves. A mountain range or a drainage system, a river, a cloud or an atmospheric cyclone—all possess their characteristic systems of implicative interconnected differences. Again, in mechanical appliances we see the same relational character: a bridge is to the designer a temporal actualization of mathematical form, a motor is a complex of differential relations, a ship is the expression of a form in naval architecture, a building a system of static equilibria. Further, in biological phenomena the underlying structures are seen to be formal (cf. *Essay on Relation*, par. 32). A cell is a system of relations between nucleus, cytoplasm and ectoplasm; an organism is a system of cells and a coördination of organs; a society, a complex relationship of organisms and a country a politically organized society related to a territory by property rights. Again to refer to diverse fields, a temperament is a relational whole of emotions, a book a coördination of thoughts, a musical composition an order of notes. Wherever in the world of the animate or the inanimate we look the underlying nature of the included items is comprised of a formal nexus of ontological relations.

8. Now it is not necessary nor is it possible to enumerate all things singly to indicate that whatever is, is the expression of a rational form and that this form comprehends the ground for all the aspects of the thing and all its relations. It is very possible that for any given thing we cannot discern the exact nature of the relational system which constitutes it. But that it is the expression of such a form we can know with the same definiteness with which, when we see an assembly of people, we can know that there is a number which expresses the aggregate of individuals in the assembly even though we cannot tell what that particular number is. Or to employ a more formal example we may know from the formula for its roots, that a quadratic

equation has a solution even though temporarily we are prevented from finding it. We may not, in sum, know what the rational form which constitutes a thing is and this form may consequently be a matter for investigation; but that it has such a form we can know.

9. We have previously seen that whatever relations a thing has are compresent in a nexus of implication. But this nexus of implication is itself a succession of rational forms. Thus the essential nature of any thing is connected with the essential natures of other things. The order, moreover, of this connection is the same as, i.e. identical with, the logical order of the connection of things. The order of rational forms and the logical liaison of things is one and the same for the thing is, in its real existence (cf. *Essay on Existence*, par. 9) inseparable from the rational form which comprises it. Ontological coherence and rational unity are identical. We do not have two separate but parallel orders: an order of things, on the one hand, and an order of rational forms on the other. But, on the contrary, we have one essential order which is at once logical and ontological in its character.

10. Since rational forms are interlinked, a thing, whatever its specific nature may be, is logically continuous with a differentiated nexus of implication. Now all differentiation is differentiation within the realm of being. Anything as an instance of differentiation lies within that realm. The differentiation of the realm of being, however, is the implication of the independent (*Essay on Dependence*, Prop. XXXIV). It is infinite and embraces all possible differentiation. Hence the logical relations constituting the dependence series that extend through any realm of being whatsoever, merge all dependent instances of differentiation into an implicative system. This system is a relational whole. Every included whole depends for its completeness and its being on its organic liaison with this system. From the order thus established and from this only, it obtains the internal and external congruence of its logical relations which gives it a status either as a thing or as a whole. The implication of the independent is the source, the basis, the unifier of the relational forms which comprehend the rationality of any dependent thing.

It is, itself, the rationality of being. By rationality thus, it is to be noted, we do not mean any temporal functioning dependent on psychological processes. We refer, on the contrary, to a non-temporal attribute inherent in the character of being. It is the implication of the independent in its totality; ubiquitous, coherent and unexceptional.

11. Now intrinsic values, to continue, are items of being. But they are dependent and hence, taken in themselves, unreal. They, like other things, receive their reality from the implicative, i.e. rational, relations which determine at once the intelligibility and the possibility of their being (Essay on Dependence, Prop. XXXIV). They are hence differential aspects of the rationality from which they emanate. But if so then the valuational significance of rationality as the source and sustainer of values is itself maximal and intrinsic. The search for the awareness of value, whether the searcher is cognizant of it or not, is the search for the vision of rationality. This latter however involves the nature of mind and of cognition and, consequently, we may turn to a consideration of these items.

II

12. By a mind we mean a rational form.

A rational form is a system of logical relations. It is an essence considered in its rational aspects. By an essence we mean a universal containing the fundamental differentiations which determine the character of a thing. The rational aspect of an essence is the implication within which that essence is comprehended. Now a thing is a system of relations and these relations presuppose for their being the being of other relations. In whatever other ways relations may be connected they are thus essentially connected by rational dependence. Such dependence is a logical relation. By a system of logical relations we mean an order of implication. The logical aspect of an essence is such

an order. It is the organic consistency of the components of the structure of the essence together with the deductive linkage of that structure with other systems of relata. Nothing is or exists outside of such a system of relations. But such a system of relations, as we have seen, constitutes a rational form and a rational form is a mind. Hence nothing is or exists outside of a mind and, conversely, whatever is has a mind. The mind moreover determines the character of the thing and the thing is a particularized expression of the mind.

13. By a mind therefore we do not mean a psychological item. The psychological properties of a particular thing are involved as event-relations in the history of the thing. They are adjectives or qualities of certain events which fall within a special class within that history. They do not determine but are determined by the mind. We may take the emotions as an example of psychological events. The emotions are not themselves constitutive of mind but exist in the event-series which composes a thing because of the nature of the mind of that thing. This determination of the psychological properties of a thing which possesses such properties, like the determination of any of its properties whatsoever, is a relation between the thing and the mind of which it is an instance. It may be thus described. The actualization of a thing involves the actualization of the universal in which the thing has its being. Whatever particular is, is an instance of a universal (*Essay on the Universal and Its Relations*, par. 3, I). But the character of a particular as such cannot conflict with or contradict the universal of which it is an expression. On the other hand the essential properties of the particular are those properties which it has in virtue of its character as an instance of that universal. The actualization of a triangle cannot be a figure with more than one right angle nor a figure whose altitude is greater than the sum of any two of its sides. On the other hand it must be a figure whose area is equal to half its base times its altitude. In a like manner a thing cannot have psychological properties in contradiction to the differentia extended to it by its mind nor except as determined by its mind. The mind thus is not a process of sensing, of feeling, nor of opining; it is not a psychological process at all but an

integral order of implicative relations. It does not have its being in organisms but in ontological relations.

14. The mind is objective.

By objective we mean ontological. The mind is an ontological item. The term objective is taken from the subject-object relation and is susceptible to misinterpretation. The subject-object relation itself and all its subsidiary relations is included within the realm of being and presupposes that realm. In order that this relation can have any non-contradictory status in being at all it must be wholly objective—objective not in the sense that it is, itself, the term of a cognitive relation but in the sense that the objective and the ontological are identical (cf. *Essay on Esthetic Values*, par. 21). If the subject-object relation is to exist it must be an instance of being and have a character determined by its ontological implications. Hence it does not contain but presupposes mind and it possesses meaning only as it is contained in a comprehending mind. The mind is not contained, as a subjective term, in any such relation, but is itself the ontological order in which such a relation can exist. This order, as we have said, is objective. It is not inside of any organism nor of any instance of awareness; it is a system of relations comprehending and impenetrating things and can be seen just as objectively and concretely as the relations of the stars can be seen; not, however, by sense perception only. The aspects of objectivity and of concreteness pertaining to the mind are identical. The mind, in fact, is as concrete as the chair that you sit on or the food that you eat. It is, indeed, more concrete for these things are affected by, and dependent on, many other things fortuitous in their nature by which the mind is not affected.

15. It follows that the seat or locus of the mind is not the brain or the nervous system but the universe.

Mind is not a particular item confined within the limits of an organism. On the contrary an organism lives, has its being

and thinks within the realm of mind. And mind is rational form. It has no spatial locus but the relations of space are dependent on and expressions of it. It has a status in reality but that status is not as a particular in a fluxional world of evanescent actuality. The notion that mind has a locus in space is the outcome of the interpretation of it as a discrete substance and a particular (cf. *Essay on Relation*, par. 45). Investigations based on this thesis seek for it in the functioning of some anatomical structure. In such a place, however, it is not to be found as any object-like item. It is not the substance-term of a relation at all but is itself a system of relations. Things are in it, it is not confined within things. To look for the mind in space or as the functioning of a spatial thing, is like looking for the relation π as an object within the spatial interior of a sphere. The mind lies through and through any thing or any organism but it is not a physical aspect of it. When men investigate physiological or neurological processes they are investigating those processes as expressions of mind not mind as an expression of those processes. It is not, properly speaking men who think through the medium of mind but mind which thinks through the medium of men. And the mind which thinks through them, as we have seen, is ontological. The system of being is a cosmos of rational forms. That cosmos or order is mind. The locus of mind is the rational universe and not any particular or aggregate of particulars. In this universe all physiological processes are such because of the structure there extant and they are no more the generators of mind than they are of arithmetical relations.

16. Every individual mind is contained in objective mind i.e. in the implication of the independent.

No rational form we have seen is isolated and existent in itself. No rational form is logically unconditioned and independent. Every rational form, moreover, as an instance of being, is incorporated by dependence relations in the implication of the independent i.e. in objective mind. But every individual mind is a rational form and conversely every rational form is an individual mind. Every individual mind is, therefore, con-

tained in the mind of the independent. It is only an instance of being in its logico-organic relations with that mind.

17. Rational forms, moreover, have their being in connected series (present essay, par. 9). A dependent form thus itself has a mind. The mind of a mind is the system of rational relations which determines the intelligibility of that mind (cf. Essay on Dependence, Def. XIII). Now no individual mind exists outside of such a system. Every individual mind hence considered in itself apart from its relations is fictitious i.e. contradictory. This fact, however, is significant in determining the status of a plurality of such minds.

18. A plurality of individual minds is an appearance.

An individual mind is, by the previous paragraph, an integrated component of a mind which, as a mind of a mind, includes it. It is only separable by the error of over-simplification i.e. by ignoring its relations. It is, hence, in itself, an appearance. And likewise a plurality of separate apparent minds is an appearance.

19. A plurality of individual minds, however, envisaged connectedly under the aspect of rationality has a different status. It is not, for example, like an aggregate of separate men in a group but like the coördination of organs in a body. A hand, as we have said, removed from a body is not essentially a hand, nor, in the same manner, a mind from the objective mind. The rational system which comprehends individual minds is, in reality, the mind in which all subordinate minds are connected.

20. There is one mind only.

Every finite or individual mind, in itself, is an appearance i.e. not a mind (previous paragraph). It is only a rational form in so far as it is an implicative component in another mind or relational whole which supplements and renders consistent its internal and external relations and this interconnection extends to the whole of rationality i.e. to the implication of the independent. Every mind, therefore, is involved in that implication and the implication of the independent is that mind and that

mind only which confers intelligibility on any finite minds. There is, therefore, one mind and only one mind on which all individual minds are dependent and of which they are modifications. The rational form of every existential thing is comprehended in this mind and the mind to which we refer is objective and ontological (present essay, par. 14). It embraces in its scope the entire order of rational relations. The unity of this objective mind is the total unity of logically coördinated differentiation.

21. Objective mind is timeless.

That alone is subject to time which is subject to change. A rational form is a system of differences. Differences are relations and dependent on universals and universals are non-temporal. If a rational form changed it would both be and not be the same system of differences (but this is contradictory) or else it would not be the rational form that changed. Now every rational form is comprehended in the implication of the independent. But the implication of the independent is objective mind i.e. the rational concatenation of universals constituting the differentiation of the realm of being. But this implication is timeless (cf. *Essay on the Universal and Its Relations*, par. 3, VII). Therefore objective mind is timeless.

22. By the predication of timelessness to this mind we do not mean, however, that it is fixed or not fixed, permanent or not permanent. We mean that all such categories, namely categories dependent on and unintelligible without time, are not pertinent to it. Such categories are no more predicable of it than velocity is predicable of the square root of three. The timelessness of a rational relation would be violated as much in saying that the relation could perdure to an infinity of time as to say that it would perdure for a second. Timelessness does not consist in perduring at all but in the inapplicability of any such temporal categories, whether of permanence or change, to the thing. Those things alone are temporal whose essence involves change, namely, actual particulars. The relations involved in time are themselves dependent items and presuppose the being

of that on which they are dependent but to which they are not essential.

23. This, furthermore, does not imply that because an item is timeless it cannot appear within the cognition of temporal knowers i.e. that no timeless things can be manifested in time. It means that the reality of such temporally manifested things does not depend on their manifestation or non-manifestation in time or actuality but on their independence of any such manifestation. A circle may or may not appear in time; whether it does or not is unessential to its nature as a circle. And in the same manner, the objective mind which is not only inclusive of this or that but of the connected order of all rational forms, is independent of time. Although the things which depend on and follow from it may themselves be manifested in time their being does not consist in this manifestation.

24. The individual mind is timeless.

Any individual mind is an implicative system of relations determined by the differentiation of the objective mind. It is involved in and is a logical consequence of that mind. But objective mind is not dependent on actuality (previous paragraph). Actuality on the other hand is dependent on it (Essay on Actuality, par. 3). Therefore every rational form i.e. every individual mind which the objective mind comprehends within its implication is also timeless.

25. The timelessness of the individual mind follows, moreover, from the unity and singleness of objective mind. There is only one mind. Any differentiation involved in this mind is rationally coherent with it and hence compresent with it. But this mind is timeless. Therefore any of its inherent differentiations are timeless i.e. any individual mind is timeless.

26. From this it follows that it is inaccurate to speak in any temporal sense, of the mind, in its real nature, as having evolved. The mind—either universal or individual—is not the kind of being to which the relations essential to temporal evolution are applicable. Regarding particulars within the realm of temporal actuality i.e. of appearance, there is a meaning in the

attribution of evolution and development to them; but it is futile to talk of the evolution of mind for the mind has never, any more than the system of natural numbers, been non-existent. Only that, however, can evolve whose nature is dependent on time and which, consequently, at some particular date, was temporally non-existent. For if a thing was at no time non-existent it is clear that it did not evolve. But evolutionary processes, like any other particular things, imply for their becoming the antecedent as well as the concomitant being of the items which constitute their presuppositions. And these processes, together with the particulars which participate in them, presuppose, either for their existence or their actualization, the being of the mind on which they depend (cf. *Essay on Actuality*, par. 3).

27. The individual mind is, however, not unrelated to time. There is a sense in which it enters such a relation although the relation is unessential to it. We shall examine the nature of this relation presently. Preliminary to this inquiry, however, it is necessary to consider the range of items which comprise the content of mind.

28. The content of the mind is the system of implication in which it is involved.

Implication is a logical relation connecting any finite item with that, on the one hand, without which it cannot be, and that, on the other, which follows from it. Implication thus extends to things rationally antecedent and things rationally consequent. The connection of these two classes of items in the mind of the thing constitutes a coherent order of implication. The nature of implication is clearly illustrated by the derivative of an algebraic function. The derivative implies the function as an antecedent and its subordinate derivatives as consequents. The implication in both cases is direct.

29. Now implication may be of two kinds: it is direct or indirect. Direct or linear implication is that in which the line of dependence is direct e.g. A implies B, B implies C etc. Direct implication may thus be either ascending, i.e. directed toward antecedent things, or descending i.e. directed towards conse-

quent things. Indirect implication is that in which the line of dependence is not direct. If A as a consequent implies B as an antecedent and C as a consequent also implies B as an antecedent, A and C are connected indirectly through their common dependence on B. Indirect implication is the implicative connection between collateral consequents and is proximate or remote according to the number of intermediate elements which connect the given terms.

30. A mind is connected with some things by direct and with all other things by indirect implication. With that, furthermore, which is an antecedent of it, it is connected by direct implication. The independent is the antecedent of all rational forms (Essay on Dependence, Prop. XXXIV). All things are, therefore, connected with the independent by direct implication. In so far as things, moreover, are consequents of the same antecedents they resemble one another. And in proportion as things differ essentially i.e. are dependent on different antecedents, they are connected by indirect implication. The greater the implicative indirectness or mediacy by which things are connected the wider the differences are which separate those things. Conversely, the more immediate the implication which connects two things the more properties those things have in common. And a thing has most in common with that, with the implication of which, it is most directly connected. These propositions we shall find significant when we come to consider the nature of cognition. Before passing to this consideration, however, it is essential to comprehend the relation between mind and time (cf. present essay, par. 27).

31. Whatever is, has its being in a system of implication which is the rational ground or mind of the thing. Things, however, may be manifested in awareness i.e. in time (Essay on Space-Time, par. 5). The conditions determining this manifestation we have previously discussed. Now the things which are manifested in time are particular things. Particular things are involved in the implication of the universals on which they are dependent (Essay on the Universal and Its Relations, par. 8). The manifestation of a particular thing in time is an individual-

ized externalization of the essence of which the thing is a modification. Now the manifestation of things in time, since those things are involved in the implication of a mind is the externalization of that mind i.e. its manifestation in time. Mind as it thus appears we shall call, in order to distinguish its temporal from its non-temporal aspect, temporal mind. By temporal mind and reason we mean the same thing.

32. It is important to note by way of corollary that externalized things are dependent on mind. Men, however, as actual particulars are externalized things. As such they are dependent on individual minds. These, however, are coherent components of objective mind. Men are, therefore, dependent for their being on objective mind. Properly speaking, men do not have minds at all but minds have men and although the latter arise and vanish in actuality the minds of which they are the expression are non-temporal.

33. By the temporal mind, as we have said (present essay, par. 31) we mean the externalization of a rational form in time. The temporal mind and reason are identical. Reason is the manifestation in actuality of the rational connections of things. It is, however, like whatever appears in time subject to the conditions of externalization imposed on a thing by the nature of the awareness relation in which it appears. A particular thing is a history and enters into an infinite number of relations all of which are included in the implication which determines it. The manifestation of the thing is finite. It cannot encompass this infinity of relations and is hence partial and successive. In this partiality lies a logical incompleteness which renders the manifestation self-inconsistent. Whatever appears in time requires for its intelligibility a supplement of cognition, an *Ergänzungsbegriff* (Essay on Awareness, par. 25). The cognitive exigency which thus arises bears a significant relation to the character of reason.

34. Reason is discursive.

As it arises in time it is ever moving and passing from the things in which it appears, to the logical completion of those

things. This movement involves the envisagement of things in progressively more comprehensive points of view, the successive transcendence of logical incompatibilities. Such a process is a dialectic and the dialectic of discursive reason, which is nothing other than the externalization of mind in time, is the movement of the mind, fragmentized and pluralized in awareness, towards the completion of its rationality (Essay on Dialectic, par. 1).

35. In this process it is not to be supposed that the temporal and the timeless minds are separate and dualistic. They are one and the same. The former *is* the timeless mind so far as that mind can be manifested in actuality. The relation governing them is not that of parallelism but of identity. Reason, or the temporal mind, is an order of appearing relations. The relations which appear and the relations in their ontological determinateness, are identical. They are both, under different aspects, reason. This, however, brings us to a second property of reason.

36. Reason is accurate. It possesses the reality of that which it reveals.

We have seen that the order and succession of rational forms is the order and succession of things (present essay, par. 9). Discursive reason is the revelation of this order. It is thus the partial manifestation in time of the logical order and connection of things. It is accurate, not in the sense that corresponds to, but in that it *is* that order of things. Its deficiency is that alone of incompleteness, not that of determinate error. It may be interposed that men err. That they do is beyond question. But they do not err in so far as the processes of their inference is rational. Discursive reason does not yield error any more than correct deduction and correct computation yield an incorrect solution to a mathematical problem. It is only when extraneous elements are introduced which sublate the rational character of the inferential process that error inserts itself. From true premises false conclusions cannot rationally be drawn. But the acceptance of false premises always involves the application of extra-rational psychological processes. All error is ultimately contradiction (Essay on Error, par. 27). The possibility of

error arises from the distortion of cognition by particularity and contradiction, in itself, contains nothing positive whereby it can attain an ontological status (Essay on Contradiction, par. 3). Error is not a wandering of reason; it is not reason at all. It is not an aberration from one sort of being into another sort of being but from being into nothing i.e. into non-referential or apparent language (Essay on Nothing, par. 9). Now the object of these propositions is not to validate the thesis of ontological rationality. It is to indicate, on the contrary, the consequences for discursive reason of the axiom of rationality. This consequence is, stated simply, that reason, as the externalization of rational form, is not related to being by correspondence but is being itself in so far as it can enter time. The meaning of reason thus indicated, however, has a further consequence.

37. Reason is precise.

The objective mind comprehends the whole differentiation of being. To whatever subtlety or fineness differences extend those differences are accompanied by correspondingly fine rational relations. The manifestation of these relations yields the manifestation of the context of differences which are implied in them. There are, hence, no differences of kind or degree, regardless of how great their relative subtlety that are not contained in the syntax of a mind, which, in actualization, reveals these differences through discursive reason. There is, in other words, no field of investigation whose internal relations are so infinitesimal that they are not logically accessible to investigative reason, even though, as we shall see, the actual extension of that reason does not, at a given time, externalize them. Whatever differences there are, are involved in a context of implication. There are, thus, no ontological limits to the precision of rational cognition, for precision is nothing else than the marking off of differences. The precision of rational cognition is indefinitely extendable. Although nothing temporal can be complete the limitations of reason in penetrating into the finest differentiation of things does not lie within reason itself but only in the necessity of its accommodation to time. It is not a limitation inherent in the

rational process nor an objective limitation in the structure of any realm of being or existence. Reason is, in short, so far as the possibility of its extension is concerned, unlimited. This truth is periodically re-emphasized when men of acute, rational intuition reveal differences and their implicative nexa which others have abandoned as impossible and beyond the scope of reason (meaning, it is to be supposed, their own powers of reasoning). If men accept the axiom of rationality at all they have no grounds to deny it in particular instances. If they reject it verbally they are, in their discourse, bound to no principle whatsoever since in professing to be consistent to any principle they imply the acceptance of the principle of consistency itself. If, on the other hand, they adopt a principle to which they do not adhere and to which they are not consistent it is clear that they have not, in fact, adopted the principle. However our concern here is with discursive reason. We have endeavored to show that it follows from the axiom of ontological rationality that discursive reason is accurate and precise. We shall now pass to a consideration of the scope of reason and its actualization within that scope.

38. The scope of reason is the content of the mind (cf. present essay, par. 28).

By the scope of reason we refer to the realm of relations logically accessible to any or all instances of discursive reason. We refer not to what this or that individual can or does actually know—a subject which we shall next consider—but to what owing to its inherent nature is susceptible to rational cognition. Now the content of any mind is the system of implication with which it is connected. We have seen, furthermore, that the relations of implication which contain the logical antecedents and consequents of a mind constitute the direct implication of that mind. The nexus of implication on the other hand which is not contained in, but is connected with, that system is the indirect implication of that mind. Those things contained in the direct implication of a mind resemble the mind in that they are involved in the same rational order. Those things contained in the

indirect implication of a mind i.e. all other things, differ from it in that they are determined in their natures by a different rational order. The immediate scope of an individual mind is thus the system of relations contained within its direct implication and it is this which is manifested in the discursive reason which is the externalization of the mind in time. Wherever there is rationality, however, reason can go and this means that the scope of reason, while immediately concerned with the things that follow directly from the mind of which it is the expression, is unlimited in the indirect implication it can reach. In short, the immediate scope of reason is the direct implication of a mind and the total scope of reason is nothing other than the whole system of implication which constitutes the realm of being. An example of cognition by indirect implication is the deduction of the properties of an n -dimensional continuum from principles discovered within the immediate implication of the human mind. It remains to be said that, so far as the objective mind is concerned, all implication is direct, for all rational forms, and hence all differentiations contained within their implications, follow from the independent (Essay on Dependence, Prop. XXXV). The scope of a finite mind, however, is primarily the system of its own logical antecedents and consequents and only secondarily that of the things connected with it by the mediation of indirect implication. It is, hence, first the sphere of things which logically resemble it in obeying the same conditioning factors as those which determine its own being and secondly the sphere of things which are determined by other rational preconditions.

The scope of reason, however, and a given instance of discursive reason are not wholly coincident. The one exceeds the other. In their difference lies the relation between the scope of reason and cognition.

39. Cognition is the partial manifestation of the scope of reason in actuality.

The scope of reason is the system of implication constituting the content of mind. This system is, in its whole extent,

ubiquitous. It involves all things both in their real and temporal aspects. But the awareness of any thing is finite (Essay on Awareness, par. 23). Hence cognition is finite. The scope of reason, therefore, is not manifested except in a limited and partial way. Now the nexus of implication connected with any mind is either direct or indirect. The cognition of things connected with the mind by indirect implication is attained only through the mediation of those things connected with it by direct implication. There is no rational cognition of the former without the latter. Hence the immediate object of the cognition of any finite thing is the direct implication of the mind of which that thing is an externalization. But this field of implication includes only those things which resemble it in their logical pre-suppositions. The cognition of any finite thing thus, is directly concerned with those things as objects which have their being in the same rational universe as itself i.e. those things which are connected with it by direct implication.

40. Now an individual, we have said, can know primarily the system of implication contained in the conditions of his own being. This he cognizes successively and in parts. The restriction thus set up, in any instance of cognition, admits the presence of a relation between that part of the scope of reason which is known and that part which is unknown. It conditions a field of partially known things in a field of unknown things. In this condition lies the possibility of learning for learning is the passage of cognition, through the rendering manifest of implicative connections, from the field of the known to that of the unknown. When we learn a thing the intelligibility of that which was previously unknown becomes manifest. Learning is an aspect of cognition. It is realized through the incremental augmentation in cognition of three characters, namely, extension, precision and integration. The progressive acquisition of these characters in the learning process is the growth of cognition.

41. The growth of cognition is a component process in the dialectic of discursive reason.

That reason is discursive, that its propelling force is the sublation of rational incompatibility, that such incompatibility

is present in any finite cognition and hence that reason moves progressively to more self-consistent wholes we have already seen. Now cognition itself is the result of, but not identical with, such a process. It is, in a progressive rational dialectic, the intuition which corresponds to the conclusion of an inference in deductive thinking. It is the end-result which eventuates as the outcome of a perlustrative concept (Essay on Value and Expression, par. 10). It is the synoptic grasp of a rational whole of implicative relations and, as such, it is an insight. The advance of the dialectic of discursive reason is the accumulation of insights. But the order and connection of rational forms is the order and connection of things (present essay, par. 9). Rational wholes, moreover, are involved within rational wholes. Hence the manifestation of one rational form involves the manifestation of a series of forms and in the dialectic of reason the advance to that rational form which involves the series as a whole, occurs through an accumulation of insights which terminate in the cognition of it. But in this process there is not accumulation only. The advance of the dialectic is concomitantly the coördination of insights. This follows from the unity of implicative relations which constitute the object of that dialectic. If these relations are manifested at all they are manifested in their connections i.e. they are manifested as coördinated. They are rendered, in cognition, complete, precise and integrated. The accumulation and coördination of cognate insights thus, is also the realization of the qualities of extension, precision and integration in knowledge, and the progressive actualization of these qualities is the distinguishing mark of the growth of cognition. The growth of cognition is, therefore, a concurrent process in the dialectic of discursive reason (cf. previous paragraph). Now there is in this process of development a further relation which requires consideration, namely, that between the advance of cognition and the category of purpose.

42. The growth of cognition is a purposive process.

As an occurrence in actuality this development is, as we have seen, a component in the dialectic of reason and hence

temporal in its character. A temporal process is purposive, however, if it is directed towards a determinate end. Such an end is an entelechy. The growth of cognition is the realization of an entelechy (cf. *Essay on Purpose*, par. 7). This entelechy is the adequate tuition of rational form together with the consequences which follow from the attainment of such tuition. The entelechy, to which the process moves, is thus predetermined; it is nothing other than the manifestation of objective mind. Since objective mind, moreover, is single and unique, the entelechy of the process is single and unique and all instances of cognition move to the same entelechy.

43. The movement of cognition towards its entelechy, however, is not the only process occurring within a history in the course of its actualization. There is a plurality of processes which do not develop independently but in restrictive interrelation. They contain factors which mutually modify one another. The growth of cognition, like any temporal, purposive process, is determined by a number of factors (some of which lie outside of cognition itself) which are operative in conditioning the particular events in any history in which the process is realized. With respect to cognition, the factors which determine it are (1) the nature of its content i.e. the implicative relations which constitute the content of mind and (2) the internal and external relations of existential causation operative in any event-series. The former determines the character of the results of the process, the latter, the conditions under which that result is realized. The operation of particular causes determines the time, the place, the detailed circumstances, particular incidents of the origin of the process and the contributing or the deflecting conditions of its unfolding. As a purposive process, it is subject to coincidence in its initiation and to helps and hindrances in its development. Chance or accident is not foreign to it. Whether a person sees something, is taught something, comes in contact with a man, or a book, or any external thing which directs his attention or stimulates his interest to the cognition of a field of relations depends on the causal connections which colligate the events in his history. With cognition, like other social or partly social processes, there is proportion, a

more and a less, a generation and an extension, a need and its satisfaction, all of which are measured and limited in their relations, and are actualized only within a varying balance of determining conditions. There is, in short, an economy to the knowing process. It is a process which develops within an order and is subject to the circumstances of that order. Men see and know, what they can see and know, and they can see and know what they do see and know and nothing else. If men saw differently, it is sometimes said, they would be different and act differently. What men see, however, is not conditioned by the men alone but by the whole order of the existential world in which they live and is itself a part of that order. If men saw differently, in short, it would only be in a different existential world. In the growth of cognition accident plays not an exclusive but a significant rôle. Men, no more than other particulars, are removed from its domain. The circumstances, the event-relations of a history, condition the interests, the contacts, the predispositions manifested in it. These are not ineffectual factors in determining the growth and extent of its cognition. Whether or not, thus, an individual attains the sight of rational form is an eventuation partially dependent on accident.

44. But it does not follow from these propositions that, if cognition is once attained, its content is also dependent on accident, for what the mind knows through the particularized individual is rational implication and the order of rationality is the same for all things. Just as the causes, however, which bring an assembly of people to the theatre are many and diverse, but the play which they see is the same, so the causes which bring people to cognition are varied and accidental but they see, with greater or less clarity, in so far as they attain to that end, the rational order of objective mind.

This, however, leads to a consideration of the relation between the clarity of cognition and the cognition itself.

45. The growth of cognition is the passage to rational clarity.

Clarity is either specious or real. Specious clarity arises when an incompatibility inherent and implied in a view is either not

seen or concealed. Such clarity is the facile clarity of oversimplification. It may be called psychological as contrasted with logical clarity. Real clarity on the other hand is logical; it reveals rational coherence. The truth of an instance of cognition and its clarity are one and the same. It follows that in making a point of view clear it is made both comprehensive and coherent. But any view which possesses meaning i.e. which is a view, if it be made clear is *eo ipso* made coherent (Essay on Truth, par. 12). It becomes an adequate expression of the order of relations which it represents. Hence the rendering of a point of view clear is the rendering of it true and conversely the rendering of it true is the rendering of it clear. A view on the other hand which involves error, since error is nothing other than contradiction (Essay on Error, par. 27) cannot be rendered clear except by the specious clarity of psychological oversimplification.

46. This may be stated in another way by saying that there is no question which cannot be answered. If the question is not intelligible i.e. if it involves a contradiction in its implication it is about nothing and is not a question. If it is intelligible it involves, and is about, an intelligible concept and such a concept brings the whole system of its implicative predication with it, in which lies every answer which can be made about it. Otherwise expressed, every intelligible question brings in the scope of its implication, its own answer with it. This does not mean that this or that or any human has, or will have, discovered that answer; it means that a question cannot be rationally asked which does not have a complete and adequate answer, or, by conversion, if a question does not have a complete and adequate answer it is neither intelligible nor a question.

47. Now clarity again is distinguished as rhetorical or logical. Rhetorical clarity is apparent clarity of expression. It is the formal clarity of grammatical syntax or the analogical clarity of metaphorical expression, as distinguished from the real clarity of consistent thinking. Rhetorical if used as a substitute for rational clarity is a species of sham not meriting any considerable laudation. It is like the petty cheating in a game which counts for success on the unsuspecting attitude of the opponent.

Final consistency is, of course, a goal whose complete realization is not to be expected in the scope of incomplete and developing thought (cf. Essay on An Appraisal of Consistency, par. 14). Clarity of cognition, moreover, is not (owing to extraneous factors involved in the exigencies of communication) always transmutable into an equivalent clarity of expression (Essay on Value and Expression, par. 30). But a speaker or writer who cannot resolve a contradiction, if honest, will say so rather than endeavor to mask it with rhetorical finesse. It is a fairly general rule that the use of *ad hominem* arguments is an attempt, intentional or unintentional, to effect such a sham. A proposed philosophy which rests on arguments of that nature rests on rhetorical rather than genuine clarity. That such philosophies are not unknown, it is unnecessary to remark. Our concern here, however, is with the correlations between logical and real clarity on the one hand and rhetorical and specious clarity on the other. Rhetorical when separated from logical is specious clarity. Only when the two are combined does the first have any validity as genuine. A heightened sensitivity to this distinction is a *sine qua non* for any discriminating appreciation of philosophy. Without it the subject flies whichever way the wind of rhetoric blows and gains as little understanding in one direction as in another. Let us return, however, to our investigation of the growth of cognition.

48. We have seen that the growth of cognition is a component process in the dialectic of discursive reason; that it is a purposive development; that it involves, together with the augmentation of extension, precision and integration in knowledge, the passage towards rational clarity. Now this process, moreover, is a propædæutic to the attainment of intellect. It remains, therefore, to consider the nature of the latter.

49. By intellect we mean the objective mind. By the attainment of intellect we mean the manifestation of the objective mind in cognition as the object of reason (cf. present essay, par. 20).

In the growth of cognition there is a coördination of minor and partial insights which issues, first in the unitary knowledge

of rational form and secondly (as a consequence of the advance of the dialectic of reason), in the cognition of the interrelation of rational forms into an order of implication. Knowledge at first dependent on the fragmentary and incomplete becomes more stable in its nature, more invariable in its application and more independent of the evanescent shiftings of apparent particulars. The revelation of rational form exposes an objective order of relations focussing in the rays of its meaning the logical intuition of discursive thought. It is the fixation of vision on relational structure. It is an insight which penetrates into the meaning of rationality—rationality not as a word, nor as a temporal movement of thought, but as a fundamental attribute of being. In so far as discursive reason comprehends such an insight it takes on the properties of the content which it reveals—there is a coalescence, in cognition, of the temporal and the timeless. This union of discursive reason and objective mind through the growth of cognition is the attainment of intellect.

50. Since, moreover, the objective mind is timeless (present essay, par. 21) the attainment of this union is, among other things, the sublation of time in cognition. Time as an effective appearance vanishes; it ceases to be regarded as having an independent existence. Its content is transmuted into a connected order of infinitely variegated relations. This does not mean that the category of psychological time is removed. Such is obviously not possible for finite subjects. Time is the distortion of cognition arising from particularity—and a particular can never ultimately transcend its nature as such. The sublation of time through the attainment of intellect means that the existent things externalized in time are seen to be, in their real natures, differentia in the implication of the independent and that hence they arise in a temporal flux not as self-sustained items but as appearances produced by the cognitive restrictions of finite awareness.

51. The attainment of intellect, as we have said, is the convergence of the temporal, with the timeless mind. It is the unification, through a purposive dialectic, of the awareness which seeks and the mind which is sought. But the discursive reason of the one and the rationality of the other are not numeri-

cally two. They are identical. They are the same mind in a diversity of aspects. The one is the reality of which the other is the realization. And their convergence, their coalescence in the attainment of intellect, is nothing other than the passage, through the development of cognition, of the temporal mind to its rational source, that is, the self-manifestation of objective mind.

III

52. In the order of rationality single parts or disparate series are not self-contained or complete and are not, therefore, wholly rational. The thinking however, i.e. the discursive reason of an individual, is successive. It passes inferentially from part to part, from implicative series to inclusive implicative series. In so far as it dwells on any part without respect to the environment of logical relations in which that part exists it is unstable, expandable and changing. Such discursive reason, of necessity, is the prevalent type of thinking of immediate life. It is that by which special situations are turned to special ends i.e. problem solving. Ingenious though it may be, it involves cognition which is predominately fragmentary. The order of being as we have seen is an interconnected realm of relational wholes. Such thinking does not give a cognition of that order. It gives either important but partial views of specialized fields or the ingenuities of technical invention derived from the tracing through of causal event-series. If, however, the process of discursive reason does not revolve continually in the partiality and separateness of a single field of relations it will progress to an accumulation and coördination of cognitions which, when the necessary elements are attained, order and arrange themselves into the tuition of a relational whole. And when such a whole is comprehended an integrated level of discernment is reached. This serves as the basis for the extension of cognition to more inclusive wholes and so on to others. There is, however, a decided difference between the insight which grasps the whole of an order of relations and the discursive reason which leads to the cognition

of that whole. The one is expanding, altering and mutating; the other is immediate and complete.

53. The significance of this difference we shall presently examine. Before doing so, however, let us pause to consider a current but untenable distinction projected onto the category of reason.

54. Human is sometimes distinguished from other postulated kinds of reason as though reason were divided into species, the one differing from the other. This view conceives the nature of reason as consisting exclusively in a psychological process which is one thing for animals (such as they possess it) another for men and another for gods and so on. But reason as we have seen has an ontological aspect. It consists in the pursuit and revelation of rational relations. It is not a psychological process merely, but a psychological process in relation to a rational order. Rationality, however, i.e. the implication of the independent, is not one thing in one part of existence and another in another. It is, in the whole scope of its connections, everywhere the same. Instances of reason, if they are reason at all, are identical and conform to the nature of reason. They may differ in range; they do not differ in essence. The reason of one particular thing is not private or specific in that it pertains to one species of sentient being as qualitatively different from another. We might as well, for example, if we make such a distinction assert that there is a difference between the water that a man drinks and the water that a dog, or other organism, drinks, and speak of the former as human and the latter as canine. But the distinction of things based on the nature of their users is accidental and does not pertain to the essence of the things. Correspondingly the qualification of reason as human in contradistinction to any other kind of reason, presumably superior, is irrelevant and accidental. Reason is homogeneous in its instances. Regardless of its locus, its product, namely, the exposition of rational relations, is identical. Nothing, in its nature as rational, is inaccessible to any instances of reason, human or otherwise, although the cognition of the thing may not, in actuality, be attained. Thinking is not reason unless it is logical and when it is, it has the whole range of rational relations at its disposal.

And logical thinking, finally, is possible only because its content—the world in which it moves—is itself rational.

55. Now it is, of course, possible to define thinking in such a way that if it is not logical it is not thinking. But if we take a more general definition and consider thinking simply as the process of reaching conclusions, then the presence of rational inference applied extensively in thought represents a considerable and gradually-won attainment. In the exposition of this attainment it will not be irrelevant to contemplate the dialectic of discursive reason as it advances in time to the cognition of ontological rationality.

56. As human thought passed through the primitive stages of wonder and animism, through cosmic mythologies interpreting in the shifting balance of projected emotions, the flux of the actual world, there arose the practical need and an active desire for clarity and truth of opinion. The free native credulity of humans, disciplined first by early thinkers, underwent subsequently a gradient of purgative modifications. Criteria of consistency asked for order and purpose. With the advancing processes of actual circumstance, constituted by the interactions of man with the external world and of man with man arose the traditions, legends and common sense of early civilizations—the common sense of which has passed on to the present. But the demand for consistency required a verification of opinion and out of tradition and common sense arose the logical expositions of special phenomena. These expositions revealed rationality in one place and in another but left the whole uncoördinated and desultory. The epic striving of cosmic mythology, however, was and is, fundamental in the nature of humans. In the developing dialectic of discursive reason it became clarified and metamorphosed into the desire for the envisagement of rational order i.e. into philosophy.

57. The process developed through varying stages of discernment. Astronomy advanced towards a unified perspective revealing a vast but simple justice in the ordering of the stars and the economy of galactic systems. Concomitantly, mathematical relations revealed themselves pervading the skies and im-

bedded in the earth. Relations in shapes and forms, lengths and motions, areas, surfaces and volumes were discovered by early geometry, revealed by analytic geometry and carried to a wider amplification by differential geometry. Underlying these relations was discovered a whole of rational connections suggested and exposed by the congruences of different processes. Thus, to consider one example, the quantitative results for a volume of revolution given in one method by solid geometry, in another by the theorem of Pappus, in another by the integration of differentials, agreed exactly in their results. All of these deductive methods converging to the same outcome suggested the presence of a nexus of rational connections extending throughout the order of relations which constitute space.

58. Now during the awakening of men to the significance of these things there arose a clarified discernment and a dawning admiration of the intrinsic value in the objective intellect within which they were revealed and in the human intellect which revealed them. This value was reflected in the expressions which such discernment brought forth; in the works that particular men produced. Thus, for example, in the power of Aristotle's Logic, in the clarity of Euclid's Geometry, in the astounding explicitness of Spinoza's Ethics, and in a series of other works which it is unnecessary to enumerate, there was recognized and there is now recognized a worth which, independently of any extraneous advantages, gives an unforgettable meaning to the attention which is devoted to them. The products of intellect, through the rationality that they reveal, embody the intrinsic value incorporate in that rationality.

59. The critic can no doubt discover, in the works to which we have referred, features that he considers superseded and imperfect. He may reject parts which do not fit the physical world he imagines himself to be in. But although these parts lack the applicability he desires still they give the rational exposition of some order of relations and so far as ontology is concerned the study of one existential world is as much a subject of valid investigation as another, even though it does not happen to be the world hypostasized as that of the judging subject. As a consequence no carefully wrought piece of scientific thinking—

for metaphysical interests at least—ever becomes obsolete. Whether or not Euclidean geometry, Ptolemaic or Copernican astronomy, Newtonian mechanics, apply to this or that existential world they do apply, in so far as they are the product of intellect, i.e. in so far as they are rational, to some correlative system of relations within the realm of ontological implication. And it is with the elucidation of all the possible aspects of this realm, not simply with one, that ontology is concerned.

60. The perspective of rational order is not confined to a single domain. It follows its subject-matter into every successive field of being. Passing beyond the existential world of particulars it reveals the interwoven nexus of rational relations pervading the realm of being as a whole. And the sight of this nexus is a thing unique for in no other type of cognition is the partiality of the thing seen, overcome by a concomitant vision of the circumjacent whole of relations in which it lies. This sight is *toto cælo* different from any other species of knowing. It is beyond the range of any specialized art or science. It is the peculiar province of philosophy and outside of philosophy no inkling of it is available, for outside of philosophy there is no study of the integrated implication of initial ontological categories without which any adequate penetration into the meaning of rationality is precluded.

61. But as the sight of this order is a thing unique the response which it calls forth is also unique. As one experiences occasionally a momentary suspense before the power of beauty in a human form with an attraction, however, which surmounts it, and experiences this also before other things of greater significance so before the vision of ontological beauty issuing from the cognition of rational structure there arises concomitantly a fixated wonder as of self-vanishment and a correlative desire to comprehend that structure in a progressively more penetrating insight of knowledge. The coherence of relations which is perceived involves ubiquity of scope and invariance of logical necessity. It contains the order of intelligible relations reaching through all the intricacy of subordinate differentiations to their source in the independent. Now the attainment of intellect, as the cognition of rationality in being, is the synoptic vision of this

order. Overstepping the highest mark of discursive reason, of ingenuity and invention, of the partial cognition of causal series in existential things, it envisages the realm of being in the integrated completeness of its rational connections. It awakens its votary from the sleep of pluralism, and, passing over the bounds of isolated particulars, reveals through a unitary intuition the intelligible consociation of every finite thing in an enveloping whole of coördinated forms. Intellect, in short, is the unfolded sight of objective mind, it is the vision of beauty in ontal rationality. It is related to its object as appreciation is related to esthetic meaning; and as the significance of the one issues from the intrinsic value which it reveals, so does that of the other.

62. Lastly it remains to be recalled that the valuational aspects of a thing are also aspects of that unique relation which the thing bears to the independent which we have called its rationality (present essay, par. 10). On this they are dependent. Thus the particular values of a thing are as much a part of it as any other of its relations. And, hence, as we have previously seen, any omission of them in an instance of cognition is a defect and a lacuna, which, in truth, turns the cognition into partial vision and error. Intellect, therefore, and appreciation are mutually indispensable and are compresent. They are not two separate modes of seeing but, in the insight which comprehends anything adequately, they are identical.

IV

63. Now at sometime or other we have heard or have dreamed that intrinsic and derivative values are always bound up with one another and coördinated; that in any existential realm those things which possess the one, contribute to the other. And this indeed follows, if not invariably, at least generally, from the causal connections of particular things. In the events of actual living the two species of value, although in varying proportions, arise together. That which possesses self-sustained value does not exist without a generative reference to the attainment of further ends. The realization of the one while significant

in itself leads also to the attainment of the other. The enjoyment of a song, although immediate and engrossing, contributes, as a means, to other and future states of well-being. Such applies likewise to the attainment of intellect and in the remainder of this essay we purpose to indicate wherein the derivative value of this process lies.

64. By the derivative value of the intellect we mean freedom. By freedom we mean the liberation from that which does not possess value and the attainment of that which does. What the values for human attainment are, and what their contraries are, we have previously indicated. We have furthermore indicated that there is, in an existential world a conflict, fluctuating in its effectiveness, between existence and attainment. There is, in other words, a set of hindrances which obstruct, if they do not frustrate, the realization of value.

65. Of the things which are valuationally detrimental there are two primary classes: those which constitute external and those which constitute internal, hindrances. An example of the former is economic want and of the latter is pleasure which deflects attainment. But since freedom is liberation from such hindrances (if there is no hindrance of any kind whatsoever then attainment is *eo ipso* realized) there are correspondingly two correlate species of freedom i.e. external and internal. These are, moreover, themselves related to two other, and correlate kinds of freedom, namely, specious and real. Specious freedom is that which appears to liberate a human from hindrances to the attainment of value, but which, in fact, does not. The attainment of specious without real is thus not the attainment of freedom at all.

66. Now for the most part, external freedom depends on internal freedom and although there is an interrelation between the two, external hindrances are only hindrances relative to the internal states of the organism. It follows that external freedom e.g. that involved in private, social, economic, political and legal freedom is, to a large extent, specious. Without internal freedom it merely gives the individual a more unrestricted opportunity for enslaving himself in the bondage of his own emotions. Internal freedom, on the other hand, is real, for it determines both

itself and the character of the relations which constitute external freedom. Since, therefore, this species of freedom is primary and essential, our interest, in the subsequent essays, shall be concerned with it. It is, as we have said, a derivative value of intellect.

67. Internal freedom, to continue, is likewise of two species; the freedom of the intelligence and the freedom of the emotions. The freedom of the intelligence is enlightenment; the freedom of the emotions is conative integration. By conative integration we mean the binding together of the desires into a striving, which, on the one hand renders them mutually compatible, and on the other, reflects in the steadiness of its own development the timelessness of the values to which it is directed. Let us consider first, however, the nature of enlightenment.

ENLIGHTENMENT

1. It is a question whether one can write about enlightenment unless he is himself enlightened. Since, however, it would be rash for any mortal to claim such preëminence the subject appears to be one which is either precluded from discourse or left to those who have more temerity than judgment. As God alone, as it is said, is enlightened, it should perhaps be left to Him to reveal the nature of the subject. But God has planted investigative instincts in the souls of philosophers and in this way has indicated that He wants this, as well as all other subjects, to be examined. He has left, moreover, for this purpose some considerable clues regarding its nature consigning to men themselves the task of their elaboration. While, therefore, the sight of the whole subject may be reserved for such a time as soul makes its celestial migration it may nevertheless be possible, prematurely as it were, to say some relevant things about it. To begin then let us examine the nature of that with which enlightenment is concerned, namely: opinion. We shall ask: what is the nature of opinion, what is the power of opinion and what is the relation of opinion to error.

2. We have seen that error consists in contradiction either of fact or of principle; that its expression is embodied in apparent language; that error is possible and that its possibility follows from the nature of objective mind. The errors that arise in the thinking of an individual follow from his own nature and from his relations to external things. But every type of individual that is possible, is, and has its being from the nature of the independent, and hence it follows that there are those who hold erroneous opinions and that they exist with the same necessity in the differentiation of being as those who do not, whoever they may be. Since, however, reason is discursive the opportunity is never wholly eliminated of the modification and improvement of opinion.

3. By opinion and belief we mean the same thing. A belief

is a proposition to which we give our assent. There are beliefs to which any given persons do not assent but they have the character of beliefs only because they are adopted by someone. We can understand an opinion which we do not believe but if the opinion is ours we believe it.

4. Now in considering opinion we shall have to engage in a little analysis. Opinions are either founded or unfounded. Founded opinions are based on demonstrative evidence showing the relation of opinion to its content. Founded opinion differs from cognition only by its incompleteness. When it advances to the envisagement of a rational whole it passes into cognition. A thing is never known until its ontological bases are known. Opinions, however, since they are disparate things, do not show these bases. It may be our opinion and it may be correct that, in Euclidean space, every triangle can be inscribed in some circle or other; we can never know this until we know the system of logical relations in which circles and triangles exist. The validity of opinion can never be discerned until we have something more than opinion about the content to which it refers.

5. Unfounded opinion is belief which lacks demonstrative support. If it is about fact it is unverified and it may be of such a nature that it is unverifiable by an appeal to fact e.g. the belief in personal immortality. If it is about principle it is not demonstrated and may be, for the time at least, beyond the scope of demonstration e.g. the notion that prime numbers are finite in quantity. Now unfounded opinions may be true or false. In the case of false opinions the falsity of some unfounded opinions may be demonstrable, of others not. In the case of true unfounded opinions their truth cannot have been demonstrated for it is evident that if it had they would not be unfounded. Unfounded opinions hence fall into two further classes: problematic and erroneous. By erroneous we here mean opinions the falsity of which is demonstrable e.g. that the circle can be squared by ruler and compass. Problematic opinions may be either true or false; their logical quality is not determinable. Erroneous opinions, it is obvious, can only be false. It follows from the axiom of rationality that it is impossible to demonstrate an erroneous opinion. Demonstration in so far as valid originates from true

premises only and it is impossible to demonstrate erroneous propositions from true premises. As a particular example we may say with Aristotle that it is impossible to demonstrate that the diagonal of a square is commensurable with its side. There are thus, in sum, three sorts of opinion: true opinions, which are founded, problematic and erroneous opinions which are unfounded. These distinctions are made in terms of the logical status which the opinions have.

6. Unfounded opinions however, fall into two other classes according to the societal significance which they possess. We shall call the one current alogism, or, in brief, alogism and the other superstition. These do not represent differences of kind but differences of degree. The one is like a petty and intermittent malefactor, a suspicious character; the other is, for the most part, like a hardened criminal. By an alogism we mean an opinion, problematic or erroneous in its nature but held as true—an opinion, however, more ephemeral than persistent and more pertinent to the peculiarities of a period than to the fundamental characteristics of an epoch. As an example of an alogism we cite the notion held during the 16th century and somewhat thereafter that money and wealth are identical and that the prosperity of a country depends on the quantity of money it contains.

7. By a superstition we mean an opinion more problematic in its nature than an alogism, more fundamental in its social effect, more persistent in its duration and more concerned with the primary attributes of nature and man than with the special peculiarities of a period. Examples of superstition are found in the beliefs current in astrology, magic and sorcery. Superstitions again are relative or absolute. Relative superstitions are the unverifiable beliefs of one age not held by another and hence considered in relation to its own beliefs as invalid. Absolute superstitions are beliefs demonstrably erroneous i.e. beliefs which contradict true premises, in which class we should put the doctrine of the trinity in its contradictory form as well as the doctrine of creation *ex nihilo*. In any period there is an extensive field both of relative and absolute superstition a thorough description of which would involve a vastly more comprehensive exposition than any hitherto compiled history of superstition.

With the foregoing distinctions, however, namely, those between superstition and alogism, and between the kinds of superstitions we are prepared to consider the nature of enlightenment.

8. By enlightenment we mean the accurate logical estimation of opinions; the evaluation of them in terms of their logical status. It is evident that enlightenment involves a kind of knowledge, namely, the knowledge of opinions, for without such knowledge the opinions themselves could not be subject to critical testing. It is evident, furthermore, that enlightenment is at once a disburdenment and a clarification of the thinking of the individual. In perceiving the erroneous or problematic character of unfounded opinions he is freed intellectually, on the one hand, and emotionally on the other, from their unsalutary dominion. And by distinguishing, in addition, such opinions as are true and demonstrated from the mass which are false or uncertain he is precluded from a confusion of opinion and knowledge. Enlightenment, in sum, consists in the discernment as to whether opinions are true, problematic or erroneous and in the determination thus of the attitude i.e. the degree of assent, with which they are to be regarded. Now the attitude held towards opinion, as we shall later see, (although its evidence is sufficiently clear to require little demonstration) contributes to the determination of the tone of the emotions, and the degree of enlightenment determines the nature of the attitude towards opinion. Enlightenment, hence, is no small factor in the elimination of such undesirable emotional states as arise from the misjudgment of opinion and from the belief in that which is held without sufficient foundation. Since very few opinions, comparatively speaking, fall into the class of the true, enlightenment consists in recognizing the erroneous or the problematic character of the majority of opinions. Hence the prevailing attitude of enlightenment is scepticism. It does not confuse that which is problematic with that which is apodictic. We cannot always discern whether an opinion is true or false; we can clearly discern, however, whether we have grounds to call it one or the other. Enlightenment consists in the exposition and valuation of such grounds. If any doubt is present whether such grounds exist it is clear that, if they do exist, they are not known, since if they were, there would be no doubt

about them. The aim of enlightenment is intellectual candidness and it does not become excited about every passing dogma with regard to which effervescent individuals assume heroic attitudes. It is, in short, the application of rational discipline to that body of opinion known as common sense.

9. Now enlightenment is one thing and learning is another. Learning may occur together with logical undiscernment; enlightenment cannot. Learning is characterized by a knowledge of the data, opinion and theory which is the heritage of an age. Such knowledge may be had with no discriminative estimate of its logical meaning. In a deeper sense, however, such learning is truly not knowledge at all but merely opinion compounded out of other opinions for, in the last analysis, the knowledge of the significance of a thing is an incorporate part of the knowledge of the thing. A desultory medley of memories no matter how extensive can never become enlightenment and serves as much towards the propagation of confusion and darkness as plain ignorance. Learning cannot become enlightenment until the rationale of its content is rendered evident. If there is a necessity of a choice, it is better to be enlightened than learned. Indiscriminate learning is for the most part indiscriminate error; it involves a very distorting intermixture of the problematic and the valid in opinion and issues often in the most grotesque or pathetic incompatibilities.

10. Learning, however, in its true sense, is not opposed to enlightenment but is, on the contrary, compresent with it. It is, in conjunction with the latter, invaluable. The two are, indeed, interdependent since in order to judge opinions it is necessary not only to know them but to know also the data or principles in accordance with which they can be judged. These have as a requisite no inconsiderable circumference of learning. Let us return, however, to the study of opinion.

11. Opinions, since they are beliefs, originate in individuals. The psychology of the individual is a field of contending opinions. Humans are natively credulous. A proposition once presented is believed unless (1) it is not understood in which case neither assent or dissent is applicable to it, or (2) it is resisted by inhibiting associations, i.e. by other opinions. Othello's ready be-

lief about the faithlessness of Desdemona is only a prerogative picture of human credulity. This credulity is, however, instanced by many things such as the belief in prophecy and fortune-telling. Man is a believing animal. In so far as nothing arises which jars his belief there are scarcely any limits to which it will not extend. Now the inhibiting associations which limit the beliefs of a human are, for the most part, the product of experience. The period before such experience can become operative i.e. the period of infancy and childhood is, since inhibiting factors have not developed, a period of free and active belief forming. It is the period when the retentive memory is furnished with its primordial content. This does not mean, of course, that the acquisition of beliefs is a process alien to any period of life.

12. Children form beliefs by their native suggestibility and by information from their social environment, particularly from their elders. Such beliefs are not merely matters of intellectual assent but are connected with an emotional tone. They become behavior patterns or conditioned responses in the nervous organization of the body. They arise in circumstances evoking desire or love and with these emotions they themselves become connected. In a certain sense it may be said that all men fall in love with their beliefs. The beliefs become psychological signals for the feeling responses associated with them. Thus emotional tone has no little effect in producing the vigorously defensive attitude which humans frequently take with respect to beliefs which are patently unfounded or problematic. No one has yet estimated the number of men who have been slain or, more honestly, murdered by others who have felt themselves called upon to defend their beliefs by such boisterous methods. That the number would have to be characterized by an epithet more emphatic than *huge* is a matter of no uncertainty. Beliefs attract emotions to themselves and emotions are the springs of conduct. With children the formation of personal attachments and the acquisition of beliefs are practically identical processes. Since a child, moreover, absorbs beliefs from his social environment he absorbs as his own, the current opinions of his surrounding culture. The process is one of which the child is for the most part unaware.

13. Now life, whether men will or not, requires action.

Action requires desire, assent and decision. Decision, however, involves belief. Belief becomes thus a disposition to action. In a certain sense a somnambulist may be said to have beliefs. He makes, i.e. his body makes distinctions, recognizes differences and he acts according to them. He is, however, barely or not at all aware of the process. In the same manner belief arises in the waking organism, i.e. assent is given and we become aware of the assent after it has already occurred. The making of a belief and the discovery of the belief are, in fact, different but they are thought of as the same. We say that we make our beliefs when we discover them. We, in fact, merely become aware of beliefs which are already either inchoate or formed.

14. In the making of our beliefs, thus, there is a multitude of causes operating of which we are not aware. Hence there arises a fictitious notion of autonomy in belief-making. The choice, however, which men are said to exert in the formation of their beliefs is itself nothing other than an expression of the causes which determine the belief. Hence the power of having or not having opinions does not lie within the organism itself. Men must have opinions, whether they wish to or not. But more accurately, the will by which men have opinions is nothing other than the nexus of causes which determines these opinions. It is a curious thing that in many sects men persistently and often vehemently insist on the unqualified duty of believing as if doubt were a far more intelligible attitude towards their faith than belief.

15. A belief once established becomes an article of assent and a pattern of behavior. It persists until something deflects it. Beliefs possess a kind of inertia. They are not self-changing items. Hence men's beliefs are not changed by themselves but by circumstances, whether these circumstances involve humans or other items. An opinion once held is held unless it becomes incompatible with another and more credited opinion. Thus the opinions which a man holds are dependent as much or more on what he does not see as on what he sees. For in not seeing, i.e. in not learning, the things incompatible with his opinions he does not change them; or rather they are not changed for him. We do not, of course, mean here that a kind of negative causation

takes place; that the absence of an item can be truly a cause, as it is said, for example, that the absence of phosphorus in the soil is the cause of poor crops. Such language is figurative. The causes of the crop reduction are the chemical reactions that *do* take place in the physiology of the plants. The absence of phosphorus is a condition under which these reactions occur and if phosphorus were present the reactions would differ but, properly speaking, the absence of the phosphorus is the cause of nothing. Similarly the nature of a man's opinions is partly determined by the antecedent knowledge which the man has and if the man had, or acquired, knowledge incompatible with his opinions he would not (barring cases of complete psychological dissociation) assent to the opinions. It follows in this sense that a man's opinions are determined, as we have said, as much by what he does not see as by what he sees. A mathematician would not accept the opinion that the limit of the sine of a variable angle divided by the angle is equal to zero; this would be by no means evident to a non-mathematician. Opinion arises in the awareness of a man, becomes fixed by habit and declines only when internal modifications in conjunction with external actions change it. There are no jumps in the process—i.e. there are no unconditioned discontinuities even though changes are sudden. The origination of beliefs (not in respect to their content but in respect to their circumstances, namely, with respect to whether this or that individual embraces them) is due to accident and coincidence. All kinds of impressions flow into the developing human, become associated with and interwoven into his emotional character and even though they vanish ostensibly, leave a trace behind. It is not by thought alone that men are Christians, Buddhists, Mohammedans or what not, but by accident. And it is not beyond probability that the same temperaments which are energetic about the one would be energetic about the other were they born into it.

16. Beliefs, as we have said, once originated acquire emotional associations. These play no inconsiderable rôle in determining the intensity of assent with which the belief is maintained. As a belief becomes interwoven into the self-directed and defensive emotions of an individual it tends to be held with greater

intensity. This intensity contributes to determine the psychological nature of the belief. It may, according to its intensity, be a passing notion, a common opinion, a conviction, a compulsion neurosis or an obsession. (The last two resist all criticism irrespective of its validity.) As a rule, infantile beliefs, particularly where critical training is absent, reappear in adult life under one of these various forms.

17. After the origination of a belief in an individual, it is spread, if conditions favor it, by diffusion to others. When a belief becomes common to a great number or to the majority in a group it becomes a matter of public opinion. Public opinion is formed by the diffusion of beliefs. This diffusion, however, is not a simple process. It may be real or apparent. In the case of apparent diffusion the external language is adopted and not its meaning. No small part of public opinion is apparent and not real. It is for this reason that it is part of the experience of every one to learn that what men say that they should do, or are going to do, and what they do do, are not identical. There is in fact a certain body of public opinion which everyone, except those who are, in fact, scrupulous about their veracity, tacitly assumes to be generally uttered and rarely believed. It becomes a convention for all people to say things that no one believes. One might say that there is an inner and outer public opinion and that the two do not always coincide. Much of the conflict between nature and convention arises from this pseudo-public opinion. A considerable part, for example, of the diffusion of religions, particularly of anti-natural, religious opinions, is apparent rather than real. People accept the ritual or the language of the doctrine but keep their true beliefs and their characteristic behavior, modifying them only by distorting them with the superfluous addendum of hypocrisy. The average man does not, for the most part, burn with religious fervor and although out of the pristine credulity of his nature he is ready to applaud the propagandist he devises in actual life some means or other to follow out his natural desires—indeed when these are anti-social he often invents some way to use the doctrine as an instrument for promoting them. The point, however, in which we are here interested, is that there is a very significant distinction which,

because of the nature of language, is easily overlooked, between what appears to be public opinion and what is public opinion.

18. Now public opinion is subject in its formation to the same conditions which determine individual opinion, with the difference, however, that its susceptibility to them is more emphatic since public opinion is a relatively slow moving thing. (1) It is formed in a large part by accidental causes and is in a small degree only the result of sincere and rigorous thinking. (2) It possesses inertia and persists until it is displaced. Since, however, an opinion once established has to be changed not in the thinking of one but of many men its momentum is, as a rule, considerably greater than that of individual opinion. (3) It is dependent on what is not seen, i.e. not understood, to a greater extent than on what is. Again since the common knowledge possessed by a social group is far less in extent than that of an individual or rather, to be accurate, of some individuals, ignorance or error plays a proportionately greater rôle in determining its character. (4) It contains a considerable portion of infantile revivals e.g. the fatalistic notion of a particular or national providence or the notion that what the group does cannot be ethically wrong. (5) Opinions first become public by a series of unknown causes and are recognized as public only after they have become such i.e. the community does not form its opinions but its opinions are formed for it and it becomes aware of them only after they are already formed. The control of public opinion is the most powerful instrument that man possesses. It is, in fact, the only lasting, basis of the power of humans over humans and hence in any extensive community there is a large body of people who devote their lives, for a variety of motives, to the process of determining of public opinion. Whether opinions do become public, however, and which opinions survive and what the causes are that make those rather than other opinions survive, is something which is known, if at all, only after a prolonged period of time.

19. At this point let us pause to make some definitions. By a *socius* we mean a member of a community. By a *standard socius* we mean a member of a community who holds the common public opinions (having amassed them in his adult stage by

absorption during growth) and does not possess opinions beyond these or, if so, few and unessential. It is clear that we are referring not to this or that individual but to a type which men approach with greater or less proximity. If there is a prevailing belief in astrology all standard socii hold this belief; if in magic they would hold it in its commonest form; if in the valuational priority of machine civilization, likewise; if in prognostication through dreams, they would consult dream interpreters, etc. The majority of the members of a community assimilate the character of a standard socius, since if not, there would be no phenomenon of public opinion. As few, however, conform to the body of dominant opinion in every respect the degree to which different individuals resemble the standard socius varies. In primitive communities where homogeneity is great practically every member of the community is a standard socius.

20. Now the opinions of a group either originate within it or come in by diffusion from without. In communities where there is internal change together with an influx of diffusion currents from without there is a fermentation of opinion which keeps public belief in a fluxional state. Where a community is isolated, i.e. provincial, it is rarely aware of this intellectual isolation because of the inertia and apparent sufficiency of its own dominant opinions. The standard socius is somewhat of a constant. Where, however, there is a fermentation of opinion which loosens, pluralizes, and extends public opinion and sets up a number of conflicting opinions the standard socius keeps, on common matters, to the prevailing opinion of his occupational group. Of course there are numbers in a group of any size who diverge from the current opinion of the group but they are, by that fact, not standard socii. Their opinions may be better or worse than those of the latter; here we are interested only in the fact that they differ.

21. What determines the survival of an opinion depends on a wide range of factors, a detailed consideration of which constitutes in itself a special field of investigation. There is one factor, however, which merits our present attention. The leaders of a group, since both their *de facto* leadership and its effectiveness depend to a large extent on the control of public

opinion, tend to exploit and propagate opinions which augment their influence—frequently not shrinking from the promulgation of vicious or absurd notions provided they can thus gain adherents. Of this there are no end of examples in religion, politics, education and, in fact, in every field of social activity: in religion e.g. the notion that the priest is man's only intermediary to God, the doctrines of damnation, hell and the rest of the paraphernalia for subjection of believers; in politics an older example is the notion of the divine right of kings, a more recent example is the notion of the divine right of the majority; in education, the notion that the teacher is not autonomous but the instrument of an administration. The leaders of men, are, as is quite natural, in spite of the voluble iteration concerning the nobility of their motives, more interested in their leadership than they are in the men that they lead. One of the manifestations of this truth lies in the beliefs which they try to push into public opinion. This applies as well to private influence of person as to power of office. Men strive more for prestige than they do for truth and with the masses there is no distinction between the two.

22. In practical life most men are engaged a good bit of the time, in propagating, for the enhancement of their interests, opinions which are not quite accurate. The process is so common and effected with such subtlety that it is unnoticed except in exceptional instances. The priest sets up illusions for the public and the public in the form of lawyers, merchants, manufacturers, doctors, teachers, set up illusions for the priest as well as for one another. There is a general and common reciprocation of pragmatic illusion-forming on the part of the occupations. In particular cases it is usually either falsely denied or defended on the basis that it is necessary for the existence of the unit, whatever it may be, in the occupation. Since these factors are operating constantly on public opinion and on the opinion of one part of the public about another part of the public it is not surprising that an error occasionally slips into it. In the formation of public opinion, thus, there exist many error-producing processes. Let us consider the range of content to which these are applied.

23. Now the contradictory of every true proposition is an error and since there is an infinite number of true propositions

there is an infinite number of possible errors. Which of them will be taken over into public opinion depends somewhat on the content to which that opinion refers. Public opinion does not refer to all things but such as come within the range of the standard socius and his psychological interests. There are few current opinions about the nature of a complex variable. Now unfounded opinions as we have seen are problematic or false and these may take the form either of current alogisms or superstitions. The latter, furthermore, may be and are applied to judgments of principle, judgments of fact or judgments of value. Since, however, fact and value are compresent i.e. values are facts and facts involve values, the two types of judgment are never completely separate. Now each of these types of judgment is applied in current opinion to three general fields, namely, the cosmological, the social and the field of private relations. These again are subdivided according to content into an extensive order of special fields such as: religion, politics, economics, medicine, law, and so on down to individual relations e.g. the frequent and avid opinions agitated about the assets and liabilities of some given individual—or about the motives which some individual had for an act or expression. Thus current alogisms occur in the notions of men about the universe, about its parts, about the social, political, economic phenomena of the time, about the nature of individual men themselves and their motives and personal relations. In respect to these things, while admitting a modicum of valid notions, there is a great amorphous fog of illusion, deception, gratuitous assumption, and superstition which constitutes the body of current belief. Alogisms swarm in public opinion like the locusts in Egypt. A considerable portion of them are kept alive and propagated by those who believe they have something to gain by them.

24. To give an exhaustive list of these alogisms is beyond the scope of the present study and would be in itself an encyclopedic task. We can refer, however, by way of illustration to a few significant ones, namely, the whole so-called materialistic view of the universe i.e. a universe composed of independent solid pieces of matter; the notion of the independence of space and time (this is problematic but is taken as certain) and likewise the

doctrines of absolute space and time; the doctrine of motion dependent on the *vis impressa*; the doctrine of an absolute up and down; the doctrine of creation *ex nihilo*; the doctrine of sin; the doctrine of original sin; the doctrine that organic functions are evil regardless of the relations in which they occur; the doctrine of ecclesiastical salvation; the doctrine of the infallibility of the pope in spiritual matters; the rather degrading myth of the virgin; the notion that nationality is sacred; that a panacea for human ills lies in legislation; that freedom, social or otherwise, can be attained by external political rules rather than by internal insight and humanity; the notion that imperialism can be justified by quotations from the Bible; the notion that men can be made virtuous by sumptuary laws; the notion that men are equal in capacity; the notion that the interests of men are dependent on a fiat of the men themselves; the notion that economic prosperity is due primarily to a political administration; the notion that tariff protection is unreservedly good for the whole body of a nation; the notion that a whole people is ever the seat of sovereignty; the notion that catchwords such as "service" represent the motives and products of those who use them; the notion that sickness is the result of "lack of faith" or of moral turpitude; the notion that providence will take care of the children of a family in excess of the supporting power of its income; the naïve belief that men act from the motives they express or which, at all events, seem to be their immediate motives. These, or variations of them, illustrate the notions which prevail, according to the nature of the community, in the opinions of the standard socius. It is not to remain unnoticed, moreover, that we have passed over such outright superstitions as magic, sorcery, and witchcraft which have in the course of history produced no inconsiderable desolation.

25. Now we are not concerned here with refuting the proposition that men live to an important extent by delusions; that mythology plays a rôle in establishing the morale necessary for existence. We take it that this arises from the nature of man and from his status as a dependent particular in a causal world of helps and hindrances. But the alogisms which abound in current opinion produce besides many kinds of needless misery,

three psychological conditions of primary viciousness: intolerance, emotional conflict and uncritical conservatism. The first arises from the emphasis on problematic or false beliefs as if true, through the ignorance of their problematic character, and from the coercion of dissenting individuals to submit to them. Its instances are legion and they abound more in affairs which do not offer the possibility of being made public perhaps more than in those which do. In these cases they can be perpetrated without the onus of disapproval by such others as would not concur in them. They are, however, frequent enough in the latter. Two not uncharacteristic examples are furnished by the treatment which Galileo and Darwin received at the hands of vested authorities—not one mite of graciousness, not one iota of humanity; their attitude was brief, simple and characteristic: exterminate them.

26. Such attitudes frequently arise from inner conflicts which men cannot themselves resolve. Opinions acquire an emotional tone; they form the framework by which set and toughened nervous systems envisage their world. A change means an inner upheaval, a kind of psychological earthquake, a re-orientation of attitude towards things and values. But the old emotions are there and the new opinions are alien, foreign and do not carry with them the associations of their predecessors. An upheaval is a painful thing, it sets up dissociation and internal wrenching. Hence men oppose it by an artificial shutting out even of the recognition of the disturbing thought and fight for their old notions as for their very happiness. Some men are indeed so fearful of enlightenment that they cannot tolerate the bare reference to a new idea. The more cogent the idea seems the more they fear it. But the power of a thought is frequently more effective than the most vigorous emotional repression. Hence the intensity of intolerance with which men oppose an idea is often the measure of the violence of the conflict that has been set up within them. That such an attitude is conducive to the most uncritical conservatism and is resistant to any dialectical progress of thinking is a matter which does not require elucidation. As long indeed as the light of reason does not dawn on the opinions of men their emotions will rage over them like fire over a desic-

cated prairie. One of the most dominant factors, however, in obstructing the illumination of reason is the fog of alogism and superstition, to which we have referred and which, for the most part, without the knowledge of the standard socius himself, saturates the atmosphere of his opinions. The worst menace that a community has, is not the criminal, but the ignorant man.

27. Since, moreover, men must have opinions whether they will or not, they are inclined when no other influences are present to take those opinions which occur to them through the accident of their environment. These opinions, however, when uncriticized produce the incubus of double ignorance. They not only dominate the belief of the standard socius but make him ignorant of his ignorance; they make him think he knows what he does not know and at the same time remove a knowledge of this condition itself. This may, as we have previously indicated, occur together with considerable learning. Enlightened ignorance is Elysium compared to learned superstition. Enlightened ignorance, i.e. knowledge of one's ignorance, admits investigation; double ignorance lying on the couch of authority ignores it. Men do not investigate what they think they know.

28. We adhere, thus, to the proposition that a socius or a community which is held in the bondage of alogism and superstition is a slave to intolerance, conflict, and uncritical conservatism. It is subject to the misery of short-sightedness even though it does not recognize the extent of that misery. Intellectual freedom under such circumstances is precluded. Intellectual freedom however, as we shall presently see more fully, is an essential part of human freedom. Human freedom, hence, is likewise precluded and this applies not merely to real or internal freedom but to external freedom as exemplified in social, political and economic relations.

29. The attainment of such freedom, if it is to be attained, therefore, lies to a significant extent in the progressive modification of public opinion. Such modification, although it is a task of centuries, is not impossible. There are, moreover, certain characters of opinion which favor its acceleration. There is, in addition to the classification of opinion which we have already given, another which is pertinent to the present consideration.

Opinions are root or subsidiary. The latter are dependent on and issuant from the former. The sublation of a root alogism is at once the sublation of a whole nexus of subsidiary alogisms associated with it.

30. By a root opinion we mean an opinion which is not (as active in public opinion) referred to other opinions as presuppositions of it, but which is itself the presupposition of other opinions. Since public opining is accidental more than rational and is oblivious to contradictions which are not especially ostensible, it may assent to root opinions and reject or ignore their consequences or, on the other hand, accept the consequences and reject the opinion without being sensitive to its inconsistency. The modification of subsidiary with the modification of root opinions does not possess, therefore, a complete and absolute, but only a partial and psychological necessity. However it exists to some extent and as the discipline of logical training becomes more prevalent it becomes more effective. Men may get wrathful about contradictions and deny them, but they will not persistently adhere to them when they see them as such. The *credo ut absurdum* of the theologians who propagate it is condoned by the standard socius primarily because he does not see the absurdity involved. So far as he is concerned one meaningless utterance has as much meaning as another. Our object here, however, is the exposition of the nature of root opinions.

31. Root opinions generate subsidiary opinions. Thus, for example, the belief in magic gave rise to a whole series of cognate and subsidiary beliefs (including sorcery and exorcism) depending on it. Or again the belief in the church dogmas gave rise to, or supported, the beliefs in temporal immortality, in heresy and in hell. The beliefs in immortality, heresy and hell gave rise to the belief in the propriety of the inquisition and this in turn gave rise to beliefs in the sanctimoniousness of the use of casuistry to obtain confessions, in tortures and executions. Again the beliefs in the importance of dogma gave rise to beliefs in the resistance of schisms by force and in the turpitude of dissenters. These in turn contributed to the promotion of religious wars and religious wars reduced men to the vilest practices the race has known. In all of these affairs there developed an inter-

play of diverse emotions and opinions. Their diversity, however, did not occasion a formless aggregate of disconnected notions. Certain root attitudes and beliefs organized and collected subsidiary opinions. Before these could be removed the former had to undergo modification.

32. A marked advance in public opinion thus is not to be effected primarily by a change in subsidiary but by a change in root opinions. Such a change carries with it a considerable and salutary re-orientation of view, whereas a mere change in the subsidiary detail of a root opinion affects the fundamental attitude from which it issued only to a small degree. Now there are a considerable number of root opinions which no extensive study of enlightenment can ignore. We shall not, however, consider these in their totality, but confine ourselves to a single one. This, however, is one of the most fundamental, irreducible and destructive superstitions propagated by uncritical humans and dominant in the attitude of the standard socius, namely, the notion, so-called, of free-will.

33. The notion of free-will depends on the substantializing of time. The world of real existents, however, which involves the event-series or history that constitutes every particular, whether human or otherwise, is non-temporal (Essay on Existence, par. 12). Time is an aspect of perceptual actuality and hence is an appearance (Essay on Space-Time, par. 5). Free-will, however, is a postulated aspect of time, hence an aspect of appearance.

34. It should be noted, moreover, that free will has never been given an intelligible expression and it is very likely that in talking about it we are talking about much the same sort of vocable as a four-angled triangle. A free will is by agreement only free in so far as it is undetermined. But only that is undetermined which is not dependent on any other thing i.e. that which is independent. There is, however, only one independent (Essay on Dependence, Prop. XXXIII). And a free will is not the independent. Hence the will of any particular thing is not independent, that is, the vocable free-will is non-referential.

35. It is perhaps curious that the free-willist professes to feel boxed-in and imprisoned if he adopts the point of view of

rationalism—as if he were, by his own premises any more free before, or less free after, assenting to that view. The feeling of freedom in the sense that it is the feeling of unrestriction, however, and free-will are two entirely different things (Essay on Cosmology II, par. 34). A man can, in other words, feel free (in the sense of unrestricted) without feeling obliged, as a consequence, to masquerade about exhibiting himself as the grimacing apparition of an incarnate contradiction, i.e. as a loose and undetermined phenomenon. Again, it is curious that the free-willist often asserts that the doctrine of rationality (we frankly accept the proposition that in a rational world the notion, or rather vocable, free-will is unintelligible, cf. previous paragraph) would, if accepted, make men behave differently and possibly with less responsibility, as if, if they actually had free will, a doctrine could yet determine their will. The opposition of the free-willist to determinism is based largely on the tacit assumption, on his own part, of the latter thesis.

36. From the notion, however, that every man is the absolute origin of his own behavior, including his beliefs and thoughts, a ramified series of alogisms follows which spreads out through the whole of social and personal life and, clogging the channels of enlightenment, gives rise to brutality, misery and intolerance in the relations of individuals and groups. Since many of the things that humans do are antagonistic or subversive and since action is attributed, by the doctrine, to free will, free will is, for the most part, a synonym for bad will. Men of bad will, however, evoke anger, defensiveness, and hatred on the part of others whom their actions do, or appear, to injure and hence arises a series of desires for retribution, punishment or destruction—not a desire for reparation and understanding. The free-will attitude towards men fans into flame a host of emotions impeditive to their coöperation and destructive of their mutual understanding. In great social activities, law, commerce, domestic relations, morals and war all of these things become effective. If, however, in cases of social or private catastrophe humans, instead of looking for bad wills, look for causes, physical and psychological, which induce these situations their attitude about them is markedly different and less feudal in its nature. The sub-

lation of the doctrine of free-will would, it is true, by no means, establish intelligence and equanimity in the hearts of men with regard to their societal relations. Such an attainment, however, is a matter of degree and it would open the way—much as Copernican astronomy opened the way for the concept of a heliocentric universe—for a concept of humans not based on the superficial appearances of immediate action or the emotional responses to such action on the part of others, but for a conception having some regard for fact and rational analysis. If the behavior of men is seen in the same light as the motions of the stars, the opening of flowers in the sunlight, the tropisms in butterflies, the responses of animals, not only would there be considerable revelation as to their behavior but considerable tolerance and insight in their mutual dealings. It would be much more understandable why one man is a murderer, another a valuable citizen, another a contributor to the processes of civilization. It would be much more clear why the different strata of a community, the subnormal, the standard and the supernormal behave as they do—it would be clearer why individuals pursue the different professions, why they acquire the interests, the idiosyncrasies and the hobbies which they do. In short a recognition of the deterministic behavior of humans is one of the principal avenues to the overcoming of the barriers of particularity which cut off communication between private persons and private worlds and which make men act as if they were autonomous individuals not comprehended in a nexus of relations with other things.

37. A considerable part of the internal freedom of an individual consists in an insight into the triviality and untenableness of the body of alogism and superstition (including the notion of free-will) which surrounds him and by which he would otherwise be held in bondage. No one, however, can attain an investigative and enlightened attitude to such a degree that nothing is left to attain. Hence an enlightened man rather than glorifying in his enlightenment seeks for greater enlightenment and instead of condemning others or attempting to exalt himself over them, endeavors to understand the motives and the intel-

lectual outlooks which make them act as they do. In doing this the acquisition of insight through logical training is an invaluable assistance.

38. All errors are contradictions of facts or contradictions of premises. The current alogisms of a community consist in a wide network of such contradictions. A cognition of these contradictions is the only adequate method of their dissipation. It is in this way only that their logical status can be recognized and their valuational meaning be understood. And it is in this way that the individual can gain a knowledge of them and a freedom from those which are destructive—it is in this way that he can distinguish the valid, the problematic and the erroneous and prevent himself and others from subjection to notions externally or internally deleterious but problematic in their character. It is in this way only, in short, that he can maintain a scepticism at once acute, liberative, constructive and investigative which is the essence of enlightenment.

39. Now the investigative side of enlightenment, its positive side, merits consideration. An enlightened age is not merely one in which a comparatively few men see through the inadequacy of current alogisms. It is an age in which rational curiosity extends itself to every possible branch of knowledge—i.e. to every field of being which the mind can reach. It is an age which asks questions and propounds problems and sees in every thing a source, not of dead and inert dogma, but of doubt, reservation of opinion, and investigation—it is, in short, an age of research as contrasted to an age of tradition. An age, for example, or a group which could produce such an extraordinary book as that in the Aristotelian Corpus known as the *Problemata* is an enlightened age or group. It asks questions about everything from barley meal to ontological rationality. Whatever comes within the horizon of rational vision whether it be high or low, whether it is considered as sublime or insignificant is marked, expressed in language, and made a subject of questioning.

40. Enlightenment, however, may itself be apparent or real, specious or constructive. The mere breaking up of unfounded opinion by analytic criticism is not the final nature of enlighten-

ment. Men are obliged to have opinions whether they can be given an intelligent foundation or not and the extinction of any given delusions in no way guarantees that others equally defective will not supplant them. The removal of beliefs without the substitution of others produces an aimlessness and emptiness in the thought and emotional experience of the mass of people. It is a state which does not persist for any period of time. Tradition, even if grotesque and bizarre, does not lack a societal function and the mere negating of tradition does not as a rule affect the fundamental psychology which called the tradition into existence. Enlightenment, therefore, is not only the rational inspection of opinion, the revelation of the untenable and the problematic in opinion—it is not merely the extension of investigation and curiosity to all fields of being, but the furnishing of a succession of opinions which can be developed under the guidance of logical method.

The clearest picture of the process of enlightenment ever given to humans is embodied in the Platonic dialogues. (It is not to be found in the harum-scarum enlightenment of Voltaire). Here, i.e. in the Platonic writings, the dialectic moves with beauty of analysis and exquisiteness of precision from concept to concept, ever widening, synthesizing and apprehending its subject-matter. And while it modifies or discards a position passed over, it does not take its last position as absolute nor ignore the deficiencies in it. Such a process is the process of enlightenment. While it clears the mind and the emotions from the distractive or fear-engendering influence of the incoherent or the trivial in current opinion, it goes to positions progressively more applicable to the matter which it examines. It ends neither in absolutism nor in scepticism but in progressive investigation. It is philosophy, whose locus is neither ignorance nor knowledge, moving according to a rational method toward a goal of cognition which it can never wholly realize but which it can realize in successively higher degrees.

41. Now this process of dialectic which, as we have seen, is an overcoming of the trite and destructive in opinion is not the sole outcome but rather one of the dual aspects of the derivative value of intellect. It moves towards the attainment of freedom

from current aberrations of thought. There remains to consider the derivative value of intellect as it is realized in another and correlative species of freedom, namely, that of the emotions.

ANALYSIS OF THE EMOTIONS

1. The problem of terminology presents an initial difficulty in the description of the phenomena of emotion. The words of common usage are vague and multi-referential. They are consequently misleading. These words are, however, the elements out of which a technical or at least a more precise vocabulary can best be developed. In the examination of the subject, therefore, words will be applied progressively more to defined concepts and less to the indistinct generalities of current speech. No exact coincidence, thus, can be looked for between the accurate and the popular usage of psychological terms and the names of the emotions may be used to designate items different in the one from those in the other.

2. The singleness of names gives rise to the assumption of the singleness and discreteness of individual emotions. But the state of feeling in an organism is complex and the elements which it contains are merged and blended. A single, isolated emotion e.g. love, or anger or fear, is an abstraction; it does not exist discretely and apart from other feeling-characters. Nor are there any emotions which are radically disjunctive. Emotional opposites are not absolute. There are no mutually exclusive emotions although there are feeling-characters which seldom or never occur simultaneously. However, so-called opposed emotions e.g. love and hate, may occur together in the same feeling state. It is, indeed, owing to the actuality of such conjunctions that the ordinary phenomenon of emotional conflict arises.

3. We have, in a state of feeling, a blending and a balancing of component elements and only when one of these elements becomes emphasized over the others is the state integrated under this character and conveniently subject to the name given to it. The name then (e.g. fear or hope) is used to apply not to one feeling-element simply but to a state including a number of feeling-elements the predominant one of which is the character referred to. Now a mere state of feeling may be unorientated

and amorphous e.g. diffused pleasure or pain, malaise. Emotion, however, is feeling directed towards an object. An actual emotion, therefore, is a complex affective state whose tone is determined by a dominant feeling-element which is directed towards an object.

4. Now it is relevant in the beginning to consider the categories of likeness and difference as they apply to the range of items with which we are dealing. Emotions differ by infinitesimal gradations. There are no gaps in the emotional scale and hence the problem of classification is rendered more difficult and agreement on any single classification is not likely. Where differences are pronounced and evident, division is readily effected; where they are minute and mergent, classification tends to become relative and arbitrary. The series of emotional differences like the scale of colors presents an order in which type fuses into type by a continuity of shades; and points of demarcation are, in the nature of things, not indubitable. To find the dividing line between red and orange, purple and violet is not easy; to determine whether a given color is a standard hue or a shade of that hue is not only difficult but subject to the relativism of the chooser. However, certain colors are picked out for convenience, as bases of reference and others, in their designation, are referred to these. In the same manner certain emotions are taken as points of comparison for the rest of the emotional scale. Just as standard colors are taken as intermediate hues, i.e. hues which lie between extremes e.g. red between pink and orange, emotions are named after central or intermediate grades e.g. anger between irritation and fury. By such usage many significant things can be said about the emotions with an economy of language which could not be realized were anything like the distinctions of infima species maintained.

5. With the progress of the inquiry, however, precision becomes invaluable and it shall be our object in the present essay to indicate, so far as possible, with respect to the emotions, (1) their distinguishing marks, (2) their variety and multiplicity, (3) their connections and relations and finally their effectiveness as ligatures which tie the desires of men to the flux of their surroundings.

6. It should be noted, in addition, that the relation of difference as it applies to the particular instance of emotion is especially important. In geometry the significant point is not that a triangle appears in one place or another; what is important is that its essence is unvaried. In physics one instance of gravitation is like another regardless of external relations. In the study of the emotions, however, a given instance of anger (or fear), although it is the same in kind, is significantly different from another instance of that emotion. The knowledge of the particular differences is requisite for the adequate cognition of the emotion of that instance. There are, in fact, as many different emotions as there are instances and objects of emotion. The peculiarities, the overtones, as it were, of the emotion (and these are derived from the particular instance) give it its timbre.

7. Lastly before proceeding to the analysis at hand it remains to be observed that our object in the present essay is not to say everything which can be said (were such possible) about the emotions. We are concerned simply in rendering explicit those things which are essential and relevant to our purpose. What the latter is we have previously indicated (par. 5). Nor are we concerned either in exalting or deploring the emotions as they exist but rather in showing what their properties are—not as they may be in heaven among heavenly beings, but as, in fact, they are, among men.

8. Emotions are either primitive or derived. Primitive or basic emotions are those which do not depend for their existence on other emotions. Derived emotions are those whose elements consist of primitive emotions. The existence of derived emotions is dependent on that of primitive emotions although they may contain characters which the primitive emotions taken separately do not possess. Derived emotions are either species of primitive emotions or compounds i.e. blends of primitive emotions. What the primitive and the most significant derived emotions are we shall presently see.

9. In the terminology of feeling there are many names which refer to the same emotion in its different degrees of intensity. Such names may refer either to derived or primitive emotions but do not, as they sometimes seem to, refer to distinct emotions.

When a name referring to an emotion is posited the first step in discovering its meaning is to ask whether it refers to an emotion or to the degree of intensity of an emotion. The second step is to determine whether the emotion considered is derived or primitive. If it is derived it is necessary to consider what species of emotion it participates in and what primitive emotions contribute to its nature. It is then necessary to consider whether it, in turn, is the component of a further and more complex emotion. Derived emotions are, in the realm of feeling, like harmonies in the realm of music. The harmony has itself a particular nature although it involves and fuses together a number of elementary tones.

10. It has never been conclusively demonstrated, although attempts have been made to do so that all species of organisms must have one single kind of striving which dominates their affectional nature. The postulation of such is tempting because it simplifies considerably a theory of the emotions. But the metaphysics of possibility itself indicates that an unlimited number of kinds of organisms is logically conceivable, within which there are those which are motivated by a number of primitive strivings as well as those which express a single striving. To deny the conceivability of such requires the indication of a contradiction in the conception and as yet such has not been indicated. With respect to humans, in specific, the postulation of any of the following desires as the one and only primitive striving which the organism has, is not a priori necessary: the desire to persist in one's existence i.e. the desire for self-preservation, the desire for power, the striving for the greatest satisfaction with the least effort. These are, no doubt, significant aspects of biological existence. That any one of them is unique and unexceptional in its motivation, however, is, in the light of facts, not easy to establish. They appear to be manifested in actions, but conduct is varied and there are actions which seem at any rate to make them arbitrary as exclusive bases of interpretation.

11. Pleasure is a feeling-character which accompanies more or less closely certain bodily changes. The principal changes

occasioning pleasure are the filling and discharging of the glands.* The former gives a sense of increasing power, the pleasure of cumulation, during which tensions increase; the latter gives the sense of elation or the pleasure of relief during which tensions decrease. The term gland is here used in the widest sense as any organ which accumulates and discharges bodily material. This process, however, holds also for other organs such as the nervous system which is subject to charge and fatigue. The pleasures arising from the plenishing and discharge of the more fundamental glands are called bodily pleasures and the desires which they occasion are called appetites. The pleasures arising from the plenishing and discharge of the remoter glands and of the nervous system are called psychological pleasures and the desires which they occasion are called wishes or longings. Feelings which arise in the second way are called rather joy and sorrow than pleasure and pain. Joy and sorrow, however, are species of pleasure and pain.

12. Now a feeling-character, as we have said, becomes an emotion when it is directed to an object. Pleasure-joy and pain-sorrow are not *per se* emotions but become such when they are connected with an object considered as cause. The emotions, in fact, may be considered as arising from the orientation of the basic feeling characters towards objects and the consequent dividing out of such characters into a variety of successively more complex states.

13. Desire is the primitive emotion which arises as a consequence of pleasure and pain. An object which is considered the cause of pleasure becomes an object of desire. An object which evokes pain occasions a desire for the avoidance of that object, which desire is called aversion. Desire, however, is not as simple as this. Empirically we know that pleasure and desire are generally concomitant. We cannot rely, however, too strongly on a deduction of desire from pleasure and pain. Organisms do not

* Such other pleasures as there are lie within the province of the physiologist to indicate. Here we are concerned with pleasures that are elemental. Even though pleasures, as for example those of sight and hearing, do not consist directly in plenishing and discharge, they are, since they involve physiological functioning, accompanied by these processes.

know completely why they desire nor what they desire. There is no a priori logical necessity which prevents a man from desiring pain and avoiding pleasure. That such actually seems to be the case in some instances is evident. It cannot be argued that pain is only desired as a means to pleasure, because it cannot be shown either deductively or empirically that pleasure is the only object of desire. Desire is rooted in the physiology of the organism and the direction it takes may be and probably is relatively independent of calculations at any rate, of pleasure and pain. That its motivating elements are interwoven with pleasure and pain there is little doubt but that these two types of feeling are exclusive in the determination of desire we are not prepared to affirm. There may be factors at work of a considerably more rudimentary nature than any pleasure or pain of which we are immediately aware. The correlation, however, between physiological demands and pleasure responses is sufficiently close to make the desire issuing from the former seem to depend on the latter. Pleasure or rather a given instance of pleasure, may be the object of desire and as animals become aware of their pleasures they seem to desire them.

14. Where the desires of a human are like those of surrounding humans they are called normal. Where they are odd and unusual—especially where they seem disconnected from his personal pleasures and those of others—they are called abnormal. The concepts of normal and abnormal are taken relative to the prevailing type of individual in the community. The physiological restlessness i.e. the dissatisfaction, which constitutes desire, seeks by trial and error to find an experience which will satisfy it and an experience once found which acts as an adequate stimulus either of replenishment or release, as the case may be, sets up a conditional response which tends to make it, in the future, the object of desire. The objects of desire are thus dependent on chance. But custom and imitation within the social group determine the so-called normal objects of desire. Where chance, however, has operated before custom the resultant conditional responses set up may be connected with non-customary stimuli. In such cases the desire and its object may be considered merely as eccentric or unusual e.g. in the case of

crotchets; or it may be considered anti-social. In the latter case the whole emotional nature of the individual may be distorted by the subsequent conflict of his desires with custom, giving rise to fears, anxieties, blocked emotions, compensatory behavior and neurotic states. Since chance has its completest scope of operation in infancy and childhood it is in these periods of life that the seeds for such difficulties are frequently laid.

15. Items we have said which evoke pleasure tend to become the objects of desire. Desire directed to an object because the object is the cause, or is considered to be the cause of pleasure is a concomitant of love. Love is the feeling of pleasure (or joy) connected with the idea of an external object as cause.* Where, however, there is pleasure there is desire, hence, desire is compresent with love. Objects which evoke pain set up aversion i.e. hate. Hate is pain connected with the idea of an external object as cause. Desire, love and hate are primitive emotions. They appear to be present in some form at least as indicated by behavior, universally in organic life—even in organisms of the least complex structures. To emphasize the generality of the terms, therefore, we shall call love, attraction and hate, aversion.

16. There are as many species of attraction and aversion as there are objects to which they are directed. Thus there is love of humans, of other animals, of the sexes, of parents, of material objects, etc. and similarly with aversion. The objects, however, which give rise to the greater degrees of intensity of these emotions are those which tend as stimuli to release the greatest nervous energy within the organism and these are, for the most part, objects which appeal to the fundamental biological functions of the organism. They are, with humans, those which refer to the life occupation (provided the individual is orientated in any marked course of activity) and those which refer to immediate or remote sexual relations. These two kinds of factors often become complementary and by nature and habit the organism is charged to release strong responses to stimuli

* Cf. Spinoza's *Ethics*, Bk. III. *Affectuum Definitiones*. This whole book is probably the most explicit account of the emotions in existence.

arriving from or affecting them. As the other emotions are dependent on or derived from these responses, they also tend to rise and fall in intensity as the fundamental stimuli set off the primitive emotions.

17. Wish, inclination, longing, craving, are degrees of intensity of desire.

18. Liking, favor, cherishing, are degrees of intensity of love.

19. Dislike, aversion, enmity are degrees of intensity of hatred.

20. Sympathy is the experience in the subject (i.e. the subject possessing the emotion) of a feeling like that in the object (i.e. the individual with which the emotion is concerned). Sympathy may give rise to favor; not, however, necessarily so. It frequently does because the subject identifies the object with itself. When the object feels pain or sorrow, sympathy becomes pity which is a feeling of distress consisting in sympathy with pain of others. Pity may be accompanied by beneficence, which is pity combined with the desire to remove the pain from the object. This desire arises because pain or sorrow is felt in the subject. The beneficence of the subject tends to remove the pain from itself. Either pity or beneficence in the subject tend to evoke the emotion of humbleness (self-depreciation) in the object since it is a recognition of the weaker position of the object. The emotion of humbleness or inferiority is a painful emotion and hence tends to give rise to aversion in the object. The aversion exists in proportion to the intensity of the feeling of humbleness in the object. The aversion tends to hatred as the painful emotion in the object increases. When the subject is more powerful than the object the aversion tends to become malice which is hatred combined with fear together with the desire to inflict harm on the object without risk to the self. Malice expressed in behavior (word or action) is meanness.

21. When the beneficence of the subject does not evoke humbleness or the feeling of inferiority in the object it tends

to give rise to gratitude which is favor towards another combined with the feeling of pleasure resultant from the act of that person. Where both favor and humbleness are aroused there is a conflict and balance of emotions between gratitude and malice. When the object is aware that his emotion is that of humbleness or inferiority and that the feeling is ungrounded, the emotion and the accompanying pain, tend to vanish and concomitantly the emotion of malice diminishes.

22. When the object is naïve such self-recognition does not occur. An organism is naïve which does not comprehend the nature of its own emotions. Since naïve individuals are unaware of the nature of their emotions they express them without inhibition and often with animation. Naïveté has charm for the non-naïve because it gives the latter a feeling of power over the emotions of the naïve. When naïveté becomes dangerous e.g. through candidness, it very often loses its charm. Naïveté, by naïveté, is unnoticed.

23. Antipathy is the possession of feeling different from, and opposed to, that of the object, e.g. if the object feels pain the subject does not feel pain but pleasure connected with the idea of pain in the object. Unlike individuals e.g. humans in unlike culture groups, tend to be antipathetic. Since likeness tends to produce sympathy together with favor because the organism is led to think of itself by what is like itself and hence to have feelings like those of the like things, it tends to have antipathy i.e. to separate itself from the unlike thing. Hence arises the antipathy for foreigners held by one culture group towards another. As men become intelligent, however, they tend to recognize likenesses not previously apparent and antipathy tends to decrease or vanish. The common character of intelligence, moreover, constitutes a likeness which as it increases conduces to the establishment of sympathy.

24. Curiosity is the desire for the awareness of that of which we are not aware. It is a derived and not a primitive desire since it is doubtful whether we should originally have such a desire were it not for other desires. Curiosity arises as a desire evoked by primitive desires which are unsatisfied by present stimuli.

E.g. if a man is hungry he becomes curious as to whether or not there is food in his vicinity. Curiosity itself, however, while generally connected with use, may attain a high degree of intensity and independence. It is very probable that the development of curiosity had considerable survival value in the struggle for existence. In the development of cultures, through discovery and invention, it has played a dominant rôle. Curiosity seeks the new.

25. An object which has not come into the experience of a subject is new for that subject. All events are to some extent new (*Essay on Actuality*, par. 7). A new object with a high degree of difference from other things (such an object is, for psychological considerations, unique) furnishes no point of association—nothing in common with other things—by which the awareness of the subject may pass to another object. By wonder we mean the fixation of the awareness on an object because of its difference from other objects. A new object is said to evoke wonder when the attention rests on it.

26. When wonder is combined with esteem it gives rise to admiration. Esteem consists in the attribution of qualities to an object to which the subject assigns value. Wonder combined with attraction is fascination. Admiration combined with love is adoration. Adoration together with the desire to consecrate the self to the object is devotion. These emotions tend to vary as the value-judgments of the subject about the object vary.

27. When an item becomes the object of an emotion it also becomes the object of curiosity. Curiosity tends to be transitive i.e. if one organism entertains curiosity about an item, like organisms tend, by sympathy, to be curious about that object. Curiosity together with the presence of other emotions about an object constitutes interest. Since curiosity is contagious, interests are also contagious. Interests become mild or intense in direct proportion to the emotions which constitute them.

28. In the same way that men make judgments about themselves as objects they have emotions about themselves as objects.

A human organism, hence, has curiosity about and interest in itself and its destiny. Since the emotions about the self tend to be vivid, likewise this curiosity and interest. Examples are almost superfluous. Fortune-tellers and others obtain their subsistence from this trait in humans. The fears awakened by popular religion e.g. those evoked by the threat of post-mortem punishment play on it. When interest in the self is combined with or constituted by esteem the self is contemplated as an object of pleasure and pleasure combined with self-interest is pride. Where pride issues from esteem which is considered by others to be based on trivial things it is called vanity. Where it is dependent on esteem which is considered to have no ground whatsoever it is called conceit.

29. Pride is a fundamental though a derived emotion. It tends to color practically all other emotions and there are few feelings of which it is not in some degree an ingredient. The pride of an organism is psychologically the self of the organism. The feeling of selfness is pride itself. Were it not for this emotion it is doubtful whether the distinction of self and other would be made. If made, cause for emphasizing it would be absent.

30. Pride varies in its affective dominance and intensity. When the subject accepts judgments which it considers favorable with itself as object the emotion of pride increases; when unfavorable, it decreases. Increase of pride is called the expansion of the self; decrease, the contraction. The increase of pride is accompanied by pleasure or joy; the decrease by pain or sorrow. Pride which neither increases nor decreases causes neither. This is important. It is not the having of great pride that is pleasurable; it is, on the contrary, the increase of pride that occasions pleasure. Since the increase of pride is accompanied by pleasure the organism tends to accept favorable judgments with itself as object. These judgments when accepted are held in the retentive memory as beliefs about the self and are easily recollected in the presence of any external stimuli associated with them. Since, moreover, the organism tends to accept judgments which are favorable, with itself as object, and each judgment augments

the emotion of pride, pride is cumulative and tends to increase roughly in arithmetical progression.

31. Where the judgments on which the pride is based are considered to be more or less correspondent with fact the pride is called normal. Where the judgments are not so considered but are, notwithstanding, believed by the subject they are called delusions. Where the judgments attribute qualities of greatness to the subject, which, although they are contrary to fact, are nevertheless believed, the pride is said to induce delusions of grandeur. Pride connected with delusions of grandeur is called abnormal. When an organism errs about itself it mistakes itself for some other object (Essay on Error, par. 12). (The object may be actual or simply possible.) The pleasure accompanying increase of pride tends to cause the subject to accept favorable fictitious judgments about itself i.e. to mistake itself for other objects. It follows that few organisms have adequate ideas of themselves.

32. If a subject has a clear cognition of an object A but only partial cognition of another object B its cognition of B is clarified by comparing it for likeness and difference, similarity and contrast, with that which it knows clearly, namely, A. Clarity of cognition is augmented by comparison. If you know A and you learn that B is like A then to a certain extent you have a clearer knowledge of B. Furthermore likenesses evoke associations and differences evoke wonder and hence both elicit interests (cf. pars. 26 and 27). It follows that there is a common tendency among humans to make comparative judgments.

33. Judgments favorable and unfavorable by one individual about another, therefore, tend to be comparative. They affirm the object to be inferior, equal or superior to another or others. The inferior and the superior are unlike hence give rise to wonder which, with respect to the superior, may become admiration, to the inferior, contempt. Since pride is increased by favorable judgments humans endeavor to interpret favorably those judgments which are made about themselves. And any judgment which offers the possibility, even though it is intrinsically dis-

paraging, will be used as an augments of pride. Individuals, in fact, will be found who derive the pleasure of increased pride from any judgments regardless of how trivial or derogatory. The common inversion of a judgment unfavorable in fact, to a judgment favorable in the interpretation of the subject takes place by the contemplation of it as a judgment of difference, with the suggestion that the difference involves some kind of superiority. Indeed the mere judgment of difference without regard to distinction of kind is taken as a kind of merit since difference evokes wonder and interest, and when a subject contemplates itself as an object of interest its pride is increased with a concomitant pleasure. Thus men will pride themselves on all kinds of limitations and actions: murderers on their murders, thieves on their thefts, ignorant men on their ignorance, puritans on their intolerance etc. And in so far as the subject can apply "greater than" or "greatest," "better than" or "best" to its qualities or actions its pride and its accompanying pleasure will tend to increase. Since difference evokes wonder there is no quality (even inferiority itself) which if held in a superlative degree a human will not advance as a subject for pride. Rousseau said that he discovered, when he arrived in Paris, that it did not matter in what one excelled provided only that one did excel and, in consequence, that he resolved to become the best chess player in town.

34. In any crowd, group or community there is a more or less persisting number of types of behavior which are commonly condoned or approved. A subject may obtain favorable judgments by conformity to these. In a certain proportion of the group the concomitant pleasure thus afforded is sufficiently great to occasion a striving for further increase of pride by exceeding the rest in the approved traits. The subject thus gives rise to difference-judgments assumed to involve further approval. Hence in a crowd which is riotous some are more riotous than others, in a crowd which is applauding some strive to applaud louder than the rest, in a crowd which expresses aversion some strive to show greater animosity. In a national group some exaggerate the qualities of the group. Englishmen out-English the English, Americans the Americans, Germans the Germans, etc.

In a time when what is called patriotism is awakened there are those who strive by whatever ridiculous measures they can discover to be more patriotic than the rest. The essential point, however, respecting the type of individual who exaggerates the prevailing type of behavior, is that the emotional basis of such exaggeration lies in the desire for increase of self-expansion. The same motivation operates, if not exclusively, partially, in the endeavor to obtain difference-judgments as applied to the self by the acquisition of political office particularly where the subject is fitted neither by intelligence nor knowledge for such office. It is clear that if he had the good of the public in mind he would strive to keep out of the office, or, in any case, endeavor before assuming it, to attain the knowledge commensurate with its importance.

35. Since difference-judgments are comparative a judgment referring to a given individual varies inversely in favorability with judgments about other individuals. As judgments about others are more favorable with regard to a given characteristic those about the subject are relatively less favorable and vice versa. Hence the expansion of the pride of one organism tends to be accompanied by the contraction of the pride of others. Unfavorable judgments about others (since the judgments are comparative) increase the favorability of judgments about the subject. Hence they tend to cause pleasure to the subject. But the pride of all organisms taken as subjects is cumulative (par. 30). Therefore a conflict and balance is set up between the self-expansion of respective individuals within a group and of groups among themselves. The increase of pride of the one is to a greater or less degree offset by that of the others and in the fluctuations of this unstable balance some individuals and groups obtain more, and some less, of the pleasure concomitant with the expanding feelings of self. This offsetting and circumscription of pride by pride among different subjects we shall call the equilibration of egoism. The equilibration of egoism is never constant; it is always varying but when one individual or group exceeds the others by a large difference, emotions are set in operation in the others which eventually tend to restore the equilibrium.

36. The accumulation of pride progresses largely outside

of the awareness of the subject. Pleasures are subtle. They are multiple in variety and infinitesimally fine in shades. The pleasures of expanding pride are the subtlest and most varied of all and each leaves its modification on the organism. And consequently the subject is scarcely ever cognizant of the extent of its own pride until it is made apparent by some contracting circumstances. These circumstances are most affecting when they refer to items about which pride is most intense. These items are, as we have said, the ones which form the biological basis of the emotions and have largely to do with the primary and secondary sexual characters of the organism and with the numberless conditional responses set up around the activity (occupation) and the interests pursued by it. Any marked differentiation from the average of the social environment, either in physical constitution or psychological variation tends to become a point of contraction i.e. "a delicate point" for the subject's feeling of self i.e. pride. The greater the inferiority involved in the deviation the more responsive the emotion of pride—except, as previously pointed out, in cases where men take pride in the assumed defects themselves when they are excessive.

37. When an object is dependent on a subject the subject is said to have power. The greater the dependence and the greater the number of dependent objects the greater the power. The feeling of power augments pride and hence is accompanied with pleasure. The pleasure so derived engenders one of the most fundamental strivings of the organism, namely, that for power. Power over an object (thing or person) is *de facto* possession of that object. The intensity of pleasure concomitant with the increase of pride gives rise to a desire for possession, the intensity of which varies directly with that of the pleasure. Men, therefore, desire to possess things, to control things, animals or other men in proportion as they derive pleasure from the increase of pride.

38. The feeling of power is one and the same with the feeling of importance. Increase in the feeling of importance gives rise to pleasure. Hence many men are satisfied by being made to feel important whether they are or not. The power and

importance of an individual, to continue, may be due to physical, social or psychological relations. The dependence arising from the last is, in its higher degrees, more complete. This power consists in the capacity of one organism to determine the beliefs and emotions of another. In so far, however, as an organism gains power of any kind his pride and self-importance tend to increase and the pleasure thus generated gives rise to a desire. The desire for power as a means to self-expansion is ambition. The object of ambition is the pleasure incident to the augmentation of pride arising from the possession of power whether physical, social or psychological.

39. Pride combined with power gives rise to arrogance. Arrogance is the use of power for the sake of expanding the pride. The pleasure accompanying arrogance varies in proportion to the intensity of the pride and the completeness of the power. Arrogant men tend to contract the pride and therefore, to set up pain in other men who thereby endeavor to weaken the power and humiliate the pride of the arrogant (equilibration of egoism). Since pride is cumulative and since there are few humans without some quantity of power (with regard to something or someone) there are few humans who are not, in some sense arrogant.

40. Men tend to affirm that which increases their pride. Having a belief, therefore, they tend to maintain it since the admission of error is accompanied by contraction of self and hence by pain. The maintenance of a belief or attitude, when the grounds for such are removed, for fear of the pain of contracted pride is obstinacy. Obstinacy when applied to the commission or omission of acts is stubbornness. A belief held through obstinacy i.e. without grounds and because of the contraction of pride incident to its withdrawal, is prejudice. When a subject holds a belief in which others concur his pride is expanded by their concurrence. Hence their concurrence is accompanied by pleasure or joy in the subject and he endeavors, in so far as he can, to cause other men to concur in his beliefs. The endeavor of humans to impose their prejudices on other humans is a form of arrogance. There are countless examples

of it in common affairs but probably one of the most outstanding is the Christian missionary in China (not to mention other places). The endeavor of humans to prevent others, by coercive measures, from expressing their prejudices is a species of intolerance. Arrogance often evokes intolerance and sometimes intolerance, arrogance.

41. In so far as men are unaware of the nature of their emotions i.e. are naïve (par. 22) they tend to be unaware of the presence of the emotions which arise from self-expansion i.e. pride. Such men are *cæteris paribus* prone to prejudice, arrogance, intolerance and cognate emotions. Self-delusion (par. 31) prevents humans from picturing themselves as having these emotions. Hence humans who are most prone to these emotions are *cæteris paribus*, through the operation of the pride which engenders them, rendered unaware of their presence. Hence few men recognize these emotions in themselves although they may in others. And it follows, moreover, that if an individual least suspects himself to be subject to them he is probably most liable to them.

42. Though the presence of the emotions to which we have referred may be ignored it is probable that they will become evident in various aspects of the psychology of the organism. Fancy, imagination, dreams and day-dreams express in greater or less degree the trend of the desires. Since desires connected with the increase of pride are both primordial and poignant the dreams and fancies of the subject not infrequently express these desires. Hence the subject appears in various dominant and favored attitudes in its own world of fancy. The tendency of humans, as audiences in the theatre or as novel readers, to identify themselves with the hero is well known and frequently plays or novels are popular because of the wish-fancy they have been able to agitate. The principle is, in general, clearly evident in plays dealing with patriotic motives (characters representing the local country appearing in dominant rôles) but is as frequent in plots concerning the love of the sexes. In the fancy pictures of the subject it tends to dramatize itself in terms of the

factors producing self-expansion. Where actual conditions of life are painful and restrictive a dream world is set up.

43. The decrease of pride (self-esteem combined with interest) evokes pain or sorrow. The pain or sorrow varies directly with the amount of the decrease. Pains arising from this source are the most effective in the life of the organism. Where the pain is sharp but not profound it is called a pique. Where the pain is greater the individual is said to be hurt, offended or humiliated. When the subject considers his own act as the cause of the humiliation he is said to be mortified. The general term used to denote pain arising from contracted pride is humility. Humility is not an opposite or different emotion from pride but rather one aspect of its operation. Since humility is pain arising from the diminution of pride it follows that where there is great humility there is great pride, and where there is less pride there is less humility and if pride were quite absent humility would be absent. Humility like pride is a self-directed emotion. A state in which pride is transcended, furthermore, is a state in which humility is transcended.

44. Humility is evoked by unfavorable judgments which the subject or others make with the self as object. These judgments are comparative in that they refer to the triple relation: inferior, equal, superior. Unfavorable judgments tend to imply inferiority or, at times, mediocrity. They evoke the so-called feeling of inferiority which is pain resulting from the contraction of pride owing to the application of a judgment of inferiority. Since this feeling is painful the organism endeavors to set up a defense i.e. take a defensive attitude, against the pain and the cause of the pain. This defense may express itself in many ways but there are two ways in which it frequently becomes manifest.

45. First, where the feeling of inferiority is based on a defect, physical or otherwise, in the subject, the latter will, in lieu of removing the defect when this is not possible, develop other characteristics which act, on account of their merit, as compensations for the postulated defect. In this way it regains its equilibrium of pride.

46. The second reaction to humility arising from the stigma of inferiority is anger. This emotion is, of course, not exclusively generated by humility, but whatever combination of causes it may have, humility or the pain of contracted pride is in some degree one of them—and anger tends to be more animated as this type of pain is greater. Instances are not infrequent when the pain arising from the feeling of inferiority evokes an anger which is sufficiently great to throw a man into bodily action against relatively strong habitual inhibitions. Often—one might say generally—a sneer on the part of one human towards another evokes a more intense anger than actions far more concretely harmful. The avoidance of the stimulation of humility may, on the other hand, offer occasions which generate pleasure and self-expansion.

47. Indeed a considerable number of individuals are incited to their own destruction with their own coöperation because the process is intentionally made pleasant for them by the apparent augmentation of their self-importance. And when this process is over the individual will not admit the nature of what has happened to him, nor recognize that he has been exploited, for the same reason that made him originally subject to the process, namely, the aversion to the pain of the feeling of self-contraction. The quality called shrewdness may, in fact, be defined as the capacity of a human to affect, for his own advantage, the conduct of another by exploiting the latter's feeling of self—and the equal capacity to discern and frustrate such attempts made on himself by others. The saying: to find a man's weakness find his pride, is not without a certain significance. His points of weakness are found by trial and error and when the right ones are hit upon they are used to influence his conduct. There are few things, however, which give rise to such immediate and intense anger as the awakening of the belief in the subject that he has been cheated, duped or tricked. The impotence of the self becomes patent; the restriction of pride is violent and painful. It is not, however, as *la Rochefoucauld* remarked, so much the subtleties themselves which are practiced on us which arouse our indignation, as the implication that their authors are more clever than we are.

48. Anger is aversion together with the desire to remove, subdue or destroy the cause. The cause may be a thing, person or a quality, temporary or permanent, of the person or thing. Anger is a fundamental emotion of great biological significance and is accompanied by more or less violent actions of the viscera corresponding to the nature of the response. The reaction of anger tends to be sudden, increase in intensity to a climax and subside. Such a process we shall call a surge. In fact all of the more intense but temporary emotions come in surges. Since the emotion in a surge churns up and spreads over the entire field of awareness it dominates the cognitive attention and causes the subject to envisage the whole external world in terms of itself e.g. in cases of anxiety where everything is looked on as a cause of anxiety, or of personal love where the whole of actuality becomes associated with and colored by its feeling-quality i.e. the whole world, as the expression is, seems happy, or in the cases of other emotions such as ambition or envy or jealousy, etc. A surge, therefore, makes everything seem different than it otherwise is. Surges are consequently deceptive and delusion-producing processes. They either sublate or obscure cognition and produce a temporary and highly arbitrary evaluation of things (cf. *Essay on The Causes of Error in Judgments of Value*, par. 15). Regardless however, of the detractive elements which a surge may have, it is true that some of the rarest and most intense moments of emotional pleasure which occur in the history of the subject occur in the development and culmination of a surge and this circumstance is not to be ignored. Our concern, however, is with the emotion of anger. The nervous energy liberated—due largely to oxidation in the neurons—is great, and the muscular tone of the body is rapidly heightened. This state, nevertheless, does not persist since oxidation at a rapid rate throws off waste which accumulates and tissue is broken down faster than it can be replaced; fatigue sets in and the reaction subsides. The modification of anger, providing there is a persistent emotion after it subsides, is what is commonly called hatred. The suggestion, presence or memory of a hated object tends to heighten the emotion of hatred into that of anger.

49. Irritation, annoyance, vexation, rage and fury are degrees of intensity of anger. Disgust is anger together with contempt (cf. par. 33).

50. Anger is defensive in its effect but aggressive in the type of behavior with which it expresses itself. The aggression takes the form of the removal, the subordination or the infliction of harm on the object. This behavior, however, is modified by the fear of receiving equal or greater harm in return from the object. But in exceptional instances the subject of anger may even submit to his own destruction if only he can inflict some harm on the object.

51. Revenge is anger (and this emotion includes the desire to injure or destroy) which is incited by and directed towards an object that is considered to be the cause of an injury. The injury may be nothing other than contraction of pride due to insult, offense or aspersion. The expression of revenge in action is retaliation. The emotion of revenge generally arises where the harm inflicted is said to be intentional i.e. the aggressor is contemplated as having been aware of the harmful nature of his action. Such a qualification, however, though it may be, is not always present. There are instances in which revenge seems to be held irrespective of the patent unintentionalness of the harmful acts. Indeed an individual who has good intentions but who commits a harmful act may evoke revenge in another. Since, however, the feeling of self in the subject is contracted by the recognition of the good intention of the ill-doer the good intention is, for the most part, not granted by the subject of the emotion of revenge. Revenge interprets harm as the result of malice whether it is or not.

52. Expectation is the belief or judgment about events that they will occur i.e. become actualized. Surprise is wonder which arises from events which occur contrary to expectation. Hope is pleasure together with the awareness of an expected event. Pain connected with the awareness of an expected event is one species of fear, namely, worry. Disappointment is pain together with surprise arising from an event which occurs contrary to expectation. Rejoicing is pleasure together with surprise arising

from an event that occurs contrary to expectation. Where the expected event is free from doubt i.e. certain, hope becomes confidence; worry, despair. When the expected event is still uncertain but wavers in probability the subject fluctuates between disappointment and rejoicing as the likeliness of the event varies. Instances of such fluctuation are common but one of the best descriptions ever given of it is Thucydides' account of the emotions of the Athenian army as it watched the naval battle in the harbor of Syracuse on which its destiny depended.

53. Expected events, giving rise to hope, evoke pleasurable emotions. These are in the process of expression before the events occur. Blocked emotions are emotions which have been evoked but whose expression is stifled. Disappointment gives rise to blocked emotions; the expression of the emotions evoked by the desired event is stifled. But emotions represent the release of energy and the energy released in blocked emotion transmutes itself into other emotions, the primary one of which is anger. Blocked emotions, hence, are a primary source of anger. And the anger arising from them is directed towards the object considered to be the cause of the non-occurrence of the desired event. On this object the anger expends itself unless it is inhibited by fear or sympathy. Where the anger is itself blocked by a fear equal to, or greater than, itself, i.e. where the frustrating object is likewise the object of fear, the anger releases itself on other objects not related to it as a cause. This process is called the deflection of an emotion.

54. When no other cause of anger (i.e. than the initial and actual cause) is immediately present the subject tends to discharge the emotion on some convenient object and invent a pretext for so doing. Whether the blocked emotion is anger, however, love, pride, cruelty or some other emotion the pretext for its deflection on some other object is called a justification mechanism. Justification mechanisms may be employed in the expression of feelings other than blocked emotions; they are employed especially, however, in the expression of the latter.

55. Fear is pain together with the desire to avoid the cause. Fear and anger are so closely related that they are two aspects of the same emotion i.e. they are both expressions of defensiveness. Both have profound biological significance and both are accompanied by the same visceral reactions. The factor which principally distinguishes each is explicit behavior; anger is aggressive, fear avoiding. Anger, however, is accompanied by confidence and fear by worry or by anxiety which is an intense degree of worry (cf. par. 50).

56. Terror arises when fear becomes sufficiently intense to dominate the feeling state of the organism and exclude other emotions. Horror is a high intensity of fear together with fascination (cf. par. 26). Where the fascination is absent the emotion tends to become terror or disgust. Horror is felt with respect to events not affecting the self and hence which include the possibility of fascination; terror is felt with respect to events affecting the self. Horror may be combined with pity or with cruelty. The pity may become sufficiently intense to destroy the fascination and transmute the emotion into disgust. The cruelty may become sufficiently intense to eliminate the fear and transmute the emotion into simple fascination. Cruelty is pleasure together with the idea of pain in others; it is connected with pleasure arising from the increase of pride through power (par. 38). The latter process i.e. the transmutation of horror into fascination tends to occur where the subjects of the emotion form a crowd.

57. Fear, terror and horror express themselves in dreams and day-dreams. Events which evoke horror impress the memory incisively and tend to recur in the imaginings of the subject.

58. Fear, terror and horror, furthermore, give rise to emphatic conditional responses. They become associated with objects as stimuli which are accidentally present with the fearful, terrible or horrible events. Hence chance objects which are present at the initial stimulation may become later stimuli for these emotions. And sentient organisms have a number of fear, terror or horror responses the causes of which they are not aware. Terror and horror, moreover, diminish with custom and

familiarity. Hence in a regulated society where safety is high and events are uniform and repetitive these emotions are not common to the adult. Familiarization, however, has not yet occurred in childhood. To the child the mere sight of a strange person may be the stimulus for terror. Hence many fear, terror or horror responses and the unconscious associations which accompany them date from childhood. And they form to a significant extent a basis for subsequent aversions and dislikes.

59. Fears arising without evident and assignable causes are phobias. Phobias are extremely prevalent. The subject of a phobia seeks to assign the fear to some cause and in so doing may take irrelevant items in the environment as objects at which to direct the fears. The objects selected, however, are not wholly indifferent to the subject. They possess some associational characteristics which make them suggestive (relative to the subject) as objects of fear. Frequently the object may be some harmful thing e.g. a knife with which the subject pictures itself as inflicting self injury or as injuring another e.g. a person toward which it bears an emotion of love. But the object selected may be almost anything whatever such as a building, an animal, another human, a particular locality. The subject tends to be under the domination of its phobias as long as it is unaware of their origins. When a clear knowledge of these is obtained, *cateris paribus*, the emotion is modified, redirected or sublated.

60. Emotions, as we have said, involve release of energy or action, either implicit (internal) or explicit (external). Where stimuli take the form of obstacles harmful to the subject they release aggressive or avoiding behavior i.e. anger or fear. Some stimuli, however, are neither obstructive nor promotive. They do not occasion defensive reactions. They release emotions which are essentially neither aggressive nor avoiding. The object is contemplated without fear and without defensiveness. Such emotions are pleasurable both in themselves and on account of the release of emotions which they involve. These feelings constitute a class which we shall call esthetic emotions. Of these, two at least, cannot be ignored in any consideration of the primary emotions. The first is the feeling of beauty which is a species

of love and the second is the feeling of humor which, in its expression, is laughter.

61. Love is pleasure connected with the idea of an external object as cause. When the form of an item taken not as a means to something else but exclusively in itself, evokes pleasure, the object, by its presence alone, evokes love. Love together with wonder (par. 25) arising from the contemplation of the form of an object is the feeling of beauty. The feeling of beauty is distinguished, on the one hand, from the defensive emotions and on the other, from the avid emotions. By avid emotions we refer to desires whose end is pleasure derived from the instrumental use or the immediate consumption of present objects. Both defensive and avid emotions involve compulsion; they arise as inner surges the negation of which engenders dissatisfaction. The feeling of beauty is a free emotion; it arises from the persuasion of contemplated things, not from the turmoil of blocked energies within the subject.

62. The primary self-regarding emotions are fear, anger and pride. Since, moreover, hatred, for the most part, is an ingredient of or arises from these emotions it is dependent on them. These emotions psychologically constitute the self. They are all, for the most part, connected with pain and issue in their most emphatic expressions from instances of pain. They view objects as related to the self, namely, as helps or hindrances; as useful or noxious. When these emotions rise the feeling of beauty tends to decline and when that feeling rises these emotions tend to subside. When objects are looked upon as helps and hindrances they cease to become objects of esthetic enjoyment and as they become the objects of esthetic enjoyment the pleasure arising from them is dissociated from the feelings of self. Now emotions which are not self-regarding we shall call self-oblivious emotions. Pleasure together with self-oblivious emotions is blitheness. There is a certain blitheness in all esthetic appreciation.

63. Where fear is evoked by an object pain is present together with the desire to avoid it; where anger, pain with desire to subdue or destroy. In either case the subject tends to be thrown into action and the attitude of contemplation van-

ishes. The objects are considered as things to be manipulated or evaded and only after the action involved therein is terminated can that attitude be restored. Where pride is affected it is either increased or contracted. In the former case the pleasure which arises does not issue from the contemplation of the object. The pleasure is self-regarding and non-esthetic; and the object becomes a means to this end. Where the pride is contracted the associated pain not only tends to break up the spectator-attitude of the subject but to make the object appear hateful and noxious as the cause of pain. In either case pleasure accompanying the cognition of form is surrogated by other emotions, and the point is made evident that the esthetic and the self-regarding emotions are antithetical.

64. If the feeling of beauty is a component more or less important in proportion as it is more or less dominant in the emotions of a subject, so is that of humor for it i.e. humor, plays a relatively large rôle in the come and go of emotional variation. The feeling of humor consists in the release of nervous energy which expresses itself in laughter—laughter taken in the widest sense involving both implicit and explicit behavior. Laughter is neither an aggressive nor an avoiding form of behavior but a release of energy—a catharsis. The stimuli which call forth laughter are devoid of elements which agitate the emotions of fear, anger or pride. We do not laugh at what we fear, what we are angry at, nor what appeals merely to the pride either as an augmentative or a diminutive. There is a closer relation, however, between pride and humor than between humor and the other two self-regarding emotions. Where the stimulus to laughter takes the form, apparent or implicative, of satire, ridicule or derision, a difference-judgment of inferiority is set up about the object. Scorn, in fact, is contempt together with derision. Hence laughter evoked by this type of humor tends to be accompanied by the expansion of pride in the laughter and this gives an added and often not insignificant pleasure.

As a rule those who are given to pride or those who desire compensatory feeling for their defects or possibly misfortunes,

are also given to scorn and respond in a lively way to depreciatory laughter stimuli. It follows, however, that these psychological types, the mirth of whose humor depends on their little pleasures of self-expansion, are correspondingly blind to the humor of jests which revolve around themselves and which they take, as a rule, either with a sickly smirk or with ill-disguised sourness. It is sometimes quite extraordinary to observe the rapidity with which laughter turns into anger when a jest pointed at another is re-directed to the laugher. The feeling of pain in contracted pride immediately sets up defensive or avoiding behavior and the *vis comica* vanishes with lightning celerity. The topic then becomes "personal."

65. Since we do not laugh at what we fear, if others laugh at us the implication is that they do not fear us. This gives rise to a feeling of restricted power and contracted self and again the esthetic response, if present i.e. laughter, vanishes. Laughter is thus also a means employed to induce another person to think that he is not feared even though he may be. Since laughter, in short, is antithetic to the so-called "personal" feelings it is frequently simulated (and offers the best means of simulation) to conceal the genuine existence of such emotions. Needless to say simulated laughter as well as laughter which arises from internal stimuli e.g. the so-called spontaneous laughter of good health, are not essentially esthetic responses.

66. Humor like beauty is dependent on form. That which is humorous if expressed in a different form may be rendered non-humorous. What then are the qualities which render the form of an expression humorous? Primarily it must be so constructed as to evoke surprise. Humor, in fact, is surprise which sets off the explosive response of laughter. And laughter is nothing other than pleasure combined with a sudden explicit nervous response which is purely expressive and not in any significant sense defensive or related to the removal of pain. The surprise involved in laughter must be impersonal and not provocative of the self-regarding emotions. When it occurs with these qualifications the release of energy in laughter is accompanied by pleasure since pleasure arises with any free expression of feeling and any un-

hampered filling and emptying of the bodily organs—in this case the nervous system. What then are the types of stimuli which evoke surprise with pleasure and without defensive responses? The variety of such types of stimuli is not small. A complete analysis of them is beyond our powers of discernment. Certain types of stimuli, however, are recognized as having the required qualities.

67. Humor arises from act, word, situation or character. Where these show an odd similarity with something else in the experience of the subject the recognition of such similarity is evocative of the surprise required. The effect, however, is heightened if the thing compared is the subject of low estimation. Again, the surprise may be evoked by a contradiction which is obvious to the hearer but unnoticed by the speaker or the fictitious speaker in case of narration. Again, the act of the object tends to evoke humor when it apparently seeks an end and seems to progress but, in fact, makes no advance; or where the act of an individual intended to affect another individual as an object, redounds on the self. Again, where two causal series speciously overlap as, for example, in the case of mistakes, the surprise is evocative of laughter.

68. Since laughter becomes a conditioned response determined not so much by particular events themselves—for if repeated they lose their surprise value—but to types of events the culture of a group determines to some extent what the individuals in it will find humorous. Hence it is difficult to lay down universal principles referring to the types of humorous stimuli for all laughing organisms. In general, however, it will be found that humorous events conform to the above type-forms. A considerable factor in determining why nationalities differ in their humor i.e. the things they find laughable, is that for reasons of tradition and custom they respond emotionally in different ways to like stimuli and some consider with respect, fear, repugnance and other laughter-excluding responses, stimuli which other nationalities do not regard with these emotions. Notwithstanding, however, that they differ greatly in these respects the general forms in the events at which they do laugh fulfill the same psychological conditions.

69. We come now to a physio-psychological state which is profoundly significant, biologically as well as axiologically. The state to which we refer is a primary source of organic pain and affectional misery. Its importance in human life is only neglected when the psychological conditions governing that type of life are not understood. It is, namely, the state of boredom.

70. Boredom is pain together with loaded feeling for the expression of which no adequate stimuli are present. It involves the same species of pain which accompanies blocked emotions but arises from within not from without. It gains force in proportion as the pressure for expression increases. It may be persistent but as the intensity of unreleased emotion is augmented it develops into a surge. Boredom or ennui is distinguished from apathy which is merely lack of the power of feeling. Apathy is unconnected with pain. It is emotional stagnation. Boredom is painful and its discomfort increases in intensity as the unrelieved emotional tone becomes heightened. Indeed it reaches such a degree of distress in humans that it causes them to engage in actions extremely risky or self-destructive. There is an undifferentiated quantum of nervous energy which is ready to release itself in any form e.g. anger, fear, love, pride, and the desires with which they are associated. Its confinement is painful and its expression, through release, is pleasurable. This pleasure accompanies even the expression of otherwise painful emotions. Hence it is, that emotions such as hatred, anger, jealousy, revenge are, even though disagreeable in nature, accompanied with some degree of pleasure in their expression and when the pressure of the emotion becomes intense, the pleasure connected with its discharge is decidedly noticeable. Hence those experiencing such emotions, regardless of what other pains they may be subject to, are not bored. Even grief itself with bitter weeping brings "relief" which in the suggestion of the word implies some pleasure. Owing, moreover, to the compulsory pain of boredom, humans, and probably in a less degree other animals, cannot persist in a uniform state of contentment unless weakening emotional stimuli are modified or exchanged for more effective ones. Again, humans even though surrounded by an abundance of external goods, when these goods have lost their emotion-evoking power, particularly

for those emotions which are biologically fundamental, fall into dissatisfaction and ennui. They have everything except what their nature demands i.e. a situation involving emotional response and expression—and when this is lacking all the elaborateness of wealth or magnificence turns into dross and imprisonment.

71. The catharsis of the emotions is probably the fundamental problem of practical human psychology. The realization of this has not, for the most part, attained a degree corresponding to the importance of the subject. The development of routine mechanical economic systems, the growth and fixation of anti-natural and ascetic moral systems based on the most arbitrary and dubious theological dogmas, reflect more than anything else the ignorance of men regarding their primary needs. These systems sometimes lead to the appearance of order but behind the dam of repression there is a fluctuating sea of accumulating energy which is ready to break it down when the slightest rend appears. The truer expression of such social systems and cultures is found in the phenomena of lynchings, witch burnings, religious revivals, war, intense commercial, political and personal competition, and in an appreciable percentage of cases in insanity. It is a very significant fact that the leaders of great ascetic, austere and suppressive movements attain an ample catharsis for their own emotions by their personal activity, which the masses do not. Hence a Paul or a Calvin can be satisfied enough with his lot while the ordinary human, subject to their principles, has no such opportunity for emotional expression. This little point, however, is quite apt to be lost sight of in the glory of the reformers self-importance. In any case until men can make morals i.e. social customs, flexible, undogmatic, adaptable to particular situations and conducive to the largest possible degree of emotional expression compatible with social order there will be an aggravated conflict between the psychological nature of man and the so-called moral principles which men try to stamp onto it by external force. The first step towards reaching any practical resolution of the conflict, however, is the discernment of the fact that humans do not act by what is denominated with the unintelligible epithet free-will. They are determined. When they

do evil they do not do it willingly but act as they have to act in terms of a whole situation of which their own internal ignorance and emotions are a part. If it is desirable to have men act towards attainment and not towards destruction it is necessary not to affect the men merely, but the whole situation in which they exist and of which they are a part—it is necessary to produce other situations which will evoke the desired emotions and the desired types of action. If, however, situations are promulgated which quite disregard the essential passions and emotions of men there is small intelligence in turning on them and fulminating against them for acting in the only way in which their natures permit them to act within the circumstances produced. In conclusion, a not unnoteworthy example of the fact that men do evil unwillingly is evident in the evil which the ascetic reformers themselves do.

72. The conditions and causes of ennui are many and lie both in the nature of the particular situation and in the nature of the experiencing subject. Certain general conditions in this respect can be noted which contribute to the existence of this feeling. Where a complete mechanical adaptation to the environment is established little resistance is felt and much of the ordinary emotional nature remains dormant. Under such circumstances the organism is less stimulated in ways which evoke its awareness; the facility of exchange in action and reaction between subject and environment renders sensitivity to pleasures as well as to pains, less. But as the adaptation reaches a high state of coördination fewer and fewer emotional stimuli operate and hence a progressive state of boredom tends to set in. The pain of boredom renders the subject restless and he or she, as the case may be, seeks new stimuli. This seeking of new stimuli and restlessness are in fact one and the same thing. It results either in a breaking up of the relatively perfect adaptation to the old environment or the finding of a new environment i.e. at least new items of experience. This applies not only to the physical but, in an eminent degree, to the social environment. There tends to be thus a conflict between mechanical (in this is to be included all non-psychological relations) and psychological adaptation such that, as the one increases the other decreases and vice

versa and the optimum state involves the predominance of neither, but some kind of an adequate balance between the two. The same applies to regularity and routine. Perfect regularity produces boredom; extreme irregularity produces internal conflict. The optimum life is one in which there is sufficient irregularity to avoid boredom and enough regularity to avoid a dispersion of efforts and resultant conflict of emotions. It is the mean between the automaton-individual and the incoherent individual. The satisfaction of the desires must take into account the satisfaction of the desire for emotional expression itself, and when all other desires are satisfied but this one, the organism may still be in the dulllest kind of misery.

73. When boredom sets in the individual becomes restless and by trial and error strikes about for releasing stimuli. Where the release, however, is not immediately found in the direction desired, humor and other esthetic emotions may furnish a temporary satisfaction. As the humorous stimulus gives emotional expression and pleasure, it furnishes, to a certain extent, a compensation for other thwarted desires. These desires often express themselves, moreover, in the subject of the humor. That which we have emotions about we are interested in and humor tends to become interesting as it is about things connected with our desires. Hence humor especially in the form of a joke or pantomime may not bring release by laughter merely, but also may yield a release by occasioning, through vicarious stimuli, a partial expression of unexpressed desires. Since individuals differ, however, as to their state of ennui and as to the conditions which cause it, they tend to find different things laughable. Where, in addition, the subject censors what he would otherwise find humorous, as being depreciable, he derives pleasure of pride expansion from the difference-judgment (of superiority) which he sets up between himself and those who laugh at it. This generally occurs when the humor involves a point in which the subject himself is defective.

74. It is sometimes asserted that humor only arises as a compensation for pain e.g. that of boredom, and where there is humor there also is sorrow. This mournful point of view, however, neither follows from the nature of humor nor represents

complete agreement with fact. It is possible and probable that the sensitivity susceptible to humor, in its subtler shades, is also susceptible to pain. And it is possible that laughter may come as a kind of compensation through tears. The relief of a tragic scene by a stroke of wit is a common and almost universally employed device of dramatists. The humor as well as the tragedy is thrown into relief by contrast. But these considerations and others, evoked to support the compensation view of humor are not sufficiently universal. Laughter as an immediate surprise-response not self-regarding in its emotional nature may be quite free from a compensation-element caused either by pain, grief or melancholy. It comes on occasion as near to a pure unhampered liberation of nervous energy as any type of behavior and is accompanied by a pleasure which does not need to be pointed out. It is, in its freer forms, an unmitigated gift from the gods to man.

75. Feeling, as we have said, which becomes directed towards an object or objects differentiates itself into emotions. The objects to which it may be directed are innumerable but owing to sympathy arising from likeness and to conditional responses arising from chance and habit they apply, so far as most animals are concerned, when they are not directed towards food or other life-sustaining materials, to members of the same species. There is, however, a considerable class of emotions, that cannot be overlooked, which are directed not towards other objects but towards the emotions themselves. In other words they are emotions about emotions and can, therefore, be called emotions of the second order.

76. These emotions are built up with experience as the organism becomes acquainted with emotions of the first order and they may assume considerable degrees of intensity and give rise to especially complicated emotional states. Emotions are *felt* to be pleasurable or painful and they are *judged* to higher or lower. With respect to past emotions which have been pleasant we tend to have desires for i.e. to love them. The emotion itself is regarded as the cause of pleasure. With respect to past emotions which have been painful we tend to hold them in aversion i.e. to

hate them. When the past emotions are judged to be lower (by the subject or others) we experience a contraction of ego on recognizing them as our own and this contraction together with its attendant pain constitutes the emotion of shame. The object of this emotion is the self i.e. the complex of its own emotions. Where the past emotion is judged to be lower than customary i.e. extreme, shame becomes intensified to bad conscience which is nothing other than a species of shame about one's own emotions. This proposition may occasion surprise calling forth the objection that shame arises from deprecated acts. But a little examination shows that it is rather the motive of the acts than the acts themselves according to which the types of character, connected with the acts, are associated. When one has had a motive considered to be low and has acted according to it, his shame is augmented because he himself is not only cognizant of the motive but others may possibly infer the motive from the act. Where a bad act issues from a good, or at least an approved motive, the emotion evoked is regret i.e. sorrow associated with the self as agent. It does not become shame or bad conscience.

77. When the past emotion is judged to be high there arises a feeling of ego-expansion connected with the self as object which is the emotion of righteousness. Needless to say there are few feelings about which individual humans and nations deceive themselves as persistently and as frequently. The feeling of righteousness is one of the most luxurious of the emotions, for it permits a wide inflation of ego with apparent moral justification. It is hence an emotion in which some humans revel with great zeal and enthusiasm. The man, however, who is not concerned with his own pride is scarcely aware of the emotion. Any detraction, on the part of others, from our righteousness tends to evoke defensive behavior forthwith, since it sets up a condition painful to the subject. So it is that we insist on our own righteousness with indignation and on occasions not only uphold it with words, threatening the unrighteous with hell and torments, but reinforce our arguments, provided a proper justification mechanism can be invented, with bombs and cannons. When the latter means are successful and effective, our righteous-

ness is given considerable enlargement and we say that we live in a righteous world.

78. Since righteousness holds such a favorable position as a pleasurable emotion the judgments on which it is based tend to be held with great tenacity. To relinquish them would mean great pain, reaching, at times, to the agonies of contrition and self-disillusionment. Hence they are often defended by the organism as if it were defending its own life which, in a sense, it is. Those who have committed acts of callousness or coercion under the delusion of righteousness are not prone to relinquish the judgments which foster their delusion for they would be compelled to see themselves in a rôle of much less grandeur. Hence they not only close the gate on argument and free speech but become themselves propagandists for the judgments concerned. Righteousness, in short, leads psychologically to dogmatism, to authoritarianism, to intolerance of opinion, to social coercion and to propaganda of a more or less arrogant type (cf. par. 40). It needs little in the way of reminder to indicate that these qualities are found in their most animated expressions in popular religion, the fertile field where lofty motives are combined with logical obtuseness and where righteous humans, for the most part, ply their trade.

79. When past emotions are pleasant but are judged to be of a lower type we experience the mixed feeling of desire and shame. We desire the emotion and yet feel the pain of pride-contraction both because we have had the emotion and because we desire it, even though it is judged to be low. When the pleasure of the emotion is great the desire for it tends to be great. But as the emotion is judged to be of lower and lower degree the emotion of shame tends to be of higher and higher intensity. Where the pleasure is great and the emotion is held to be very low the organism is subject to great desire together with great shame. A conflict may be set up within the individual which leads to dissociation, refusal to recognize facts, to exclude the notion that it has the desires on the one hand, to follow them on the other with a different associational feeling-state, obsession, and in various degrees to the phenomenon of dual personality.

Where the shame element in the conflict predominates the desire is not given direct expression but it expresses itself in a multitude of indirect ways e.g. through humor, through hobbies which give vicarious expression to it, through mistakes and in fancies and dreams. Where the pride-contraction sets up an aversion which is weaker than the desire the latter attains direct expression.

80. When past emotions i.e. motives, are pleasant and also judged to be "higher" they not only give rise to desire because of the pleasure of the emotion but also because of the pleasure of ego-expansion connected with the favorable judgment. The higher the judgment, moreover, the greater the pleasure. Under these circumstances there is no sort of loftiness which men will not attribute to themselves and the feeling of righteousness becomes doubly reinforced tending to reach its normal maximum. Frequently when pleasant emotions are not exactly "high" the subject invents paralogistic grounds for giving them a high estimate thus deriving the pleasure of righteousness as well as that of the emotion or feeling *per se*. Such a process is called casuistry and is one of the most common distinguishing marks of righteousness. Righteousness, in short, and casuistry go hand in hand.

81. When the emotions i.e. motives are judged to be "high" but are unpleasant or definitely painful they generate a conflict between the desire to avoid them on the one hand and the pain of low self-judgment involved in such a desire on the other. These circumstances give rise to the feeling generally denominated as duty. Duty is hence, commonly thought of as related to pain. When the pain of low self-judgment establishes an aversion, that is, an avoiding desire which is greater than the desire established by the pleasure of the subject, the subject tends to follow the course prescribed by duty. When the latter desire is greater the subject tends to invent a pretext whereby its conduct appears to be in harmony with duty. The life of man is spent in inventing pretexts.

82. The psychology of pretexts—their nature, motivation, classification, interrelations and their use in conjunction with special emotions—is a science of essential importance in the under-

standing of humans and deserves more extended development than it has hitherto received. Pretexts operate in the emotions, and hence in the conduct of the subject, either as factors of which he is unaware (this is the most deceptive species) or as factors of which he is semi-aware or finally as instruments which are used intentionally. They are means whereby men, in following their emotions, slip away from the demands of consistency, making in this way their behavior particularly wily. But by the instrumentation of pretexts they justify their conduct to themselves and others. Pretexts have many applications. These are evidenced, however, in two common ways: (1) they are used as a means whereby one emotion can masquerade under the guise of another, and (2) as a means for avoiding contracts either tacit or explicit. Examples of the former are seen where sexual desires are concealed under the aspect of parental or protective affections or where pride walks in the garb of humility or arrogance under the aspect of legality or in other more trivial affairs.

83. With respect to the latter i.e. to contracts or agreements, it is to be said that they are adhered to with emphasis so long as they remain coördinated with the desires motivating the subject. When, however, they cease to possess this stimulative advantage the luxuriance of pretexts that spring into existence out of the empty air as it were, is a source of enchanting and perpetual wonder. That such is the case, nevertheless, is evidenced by the elaborate machinery, both in law and in mores, designed to enforce men to stick to what they say. These, however, are shaky barriers against the army of pretexts that slip over, under and around them. In general men can be trusted so long and only so long as those things which they believe to be to their advantage are promoted by the trust; if not, pretexts, conscious or unconscious (connected where there is a show of probability, with idealistic aims) absolve them. This condition, however, is not as deplorable as some moralists would seem to affirm. It is questionable whether there is any ethical basis for relationships which are not, so far as the real interests of humans are concerned, mutually advantageous. But since, as a matter of fact, men, instead of consulting their real interests, consult all sorts of shadows and vagaries which they think will satisfy their

immediate desires, the use of pretexts to slip out of contracts results significantly more in chaos than it does in any attainment of value.

84. Emotions of the second order about present emotions may take the same form as those about past emotions e.g. develop into righteousness or shame. They do not, however, have the opportunity to come into play with the same distinctness since the field of attention is held by the immediate emotions of the present. An emotion has to recede somewhat into the past before it can, as an experienced feeling, become the object of an emotion of the second order. Nevertheless before the original emotion subsides it may become blended with it.

85. When emotions are about present or near present emotions the judgments of "higher" and "lower" tend to be less dominant than the experience of pleasure and pain connected with the emotion. Hence shame and righteousness may be subordinated in present emotions to the power of the immediate active feeling and come into prominence later when the actual pleasure or pain of the emotions has ceased. Things, therefore, subsequently considered discreditable are, at the time they occur (since they are conjoined with the complement of immediate feeling which they evoke) not so evaluated. In the case of conflicts about present emotions i.e. aversion set up by low judgment contra the desire set up by pleasure, the tension is resolved frequently by a pretext. The pretext justifies the satisfaction of the desire. When the conflict is not resolved the result is inactivity. This, however, is not of long duration. Almost any chance event in any way relevant to the terms of the conflict may shift the balance to one side or the other according to the side which it affects. It follows that much feeling and much conduct is accidental and humans cannot tell why they do, or do not do, many things which they do or refrain from doing.

86. Emotions may be anticipated or unanticipated. Unanticipated emotions arise in unanticipated circumstances. A sudden alarm, for example, and its concomitant fear are often concluded before awareness of them arises. Thus emotions, particularly unanticipated emotions, are not determined by emotion

about emotions e.g. shame or self-approval, but the latter arise subsequent to, and to some extent in judgment on, the former. The point is important. We do not have emotions because we desire them but we discover our emotions after they have arisen. In the mnemonic depths of the individual there is a jungle of associations within which is gestated and born a multitude of desires of all kinds, which roam about, as it were, like animals through the soul, singly and in swarms, glowering or preying on one another and which in their roving leap out, at this place or at that, from the twilight of their habitat, into the open fields of awareness. When the subject discovers that it has loves, hates and propulsions which give rise to disapproval, disgust or horror it strives to conceal such emotions because of the self-contraction resulting from their disapproval either by the self or by others. This striving for concealment is a type of defensive behavior and appears in the form of "sensitive spots" in the reactions of the human. Where the subject, for example, shows excessive zeal, usually adverse, about items which seem generally of trivial importance, the purpose may be looked for with considerable grounds of probability in a concealment motive. Such a motive tends to show itself in exaggerated emphasis on aspects of life about which other people are more moderate. The motive is here over-emphasis for the sake of greater concealment e.g. a subject who is dishonest will strive to appear more than honest, a human who is aware of sex feelings is frequently absurdly over-precious in its modesty. Excessive zeal for etiquette, morals, rituals, religious and otherwise, and in general striving for over-exactness when exactness is not essential to the situation, are species of concealment behavior. We are, as a rule, not shocked at things because of the nature of things but because of the nature of the emotions which they remind us that we have and the intensity of our shock tends to be in direct proportion to the intensity of the emotion, the concealment of which is desired.

87. Present emotions may give rise to a series of emotions resulting from them. A man who deplores the emotion of regret may go about regretting that he regrets. Or one who considers fear an unworthy feeling may, discovering himself to be sub-

ject to great fear, become ashamed that he is fearful and annoyed that he is ashamed.

88. Expected, anticipated or possible future emotions may give rise to the emotions of the second order which apply commonly to present, near present or past emotions. With respect to these emotions of the second order, however, when applied to possible future emotions, hope and fear play a greater rôle than shame or righteousness. Indeed hope and fear do not, as emotions about emotions, apply to past or present emotion. Fear about future emotions e.g. love, hate, or special desires or about future fear itself may become so intense as to become terror. And one may even look into the future with dismay at the emotions possibly connected with events following from present events. It is, in fact, a fortunate circumstance that humans cannot see the emotions they are going to experience.

89. That which we have emotions about we are interested in. When we have emotions about our own emotions we may be said to be interested in them. The stronger the initial emotions the greater the interest in them becomes. And where a human has any profundity of emotion he tends to be interested in and have emotion about that emotion. Those in whom this interest is great are called subjective and as a rule those in whom the expression of emotion is a cultivated art e.g. poets, dramatists, and novelists, the subjective attitude is developed—at least more than in those who are concerned primarily with external objects. When subjectivity of disposition, however, becomes so great as to obstruct responses to immediate stimuli the individual is said to become morbid or morbidly introspective and this state may pass into progressive degrees of abnormality.

90. When the element of subjectivity is low in the disposition of an individual his emotions pass unperceived. They come and go with circumstances, without setting up comment or valuation. The individual responds simply to immediate stimuli and his emotions, since they seem to lack duration, coherence and purposive direction (since the human in these cases responds like a rubber ball to external stimuli and is about as aware of the

actual nature of his emotions as that object) they are called superficial. The interests of the subject become externalized. Objects outside of him command his responses and the latter tend to be like those of other species of animals i.e. based on nervous reactions of the short circuit and simpler type. If excessive subjectivity leads to morbidness, excessive objectivity leads to superficiality and triteness of emotion. The optimum conditions for the attainment of value lie in the balancing of the two and a constantly deepening appreciation both of the meaning of feelings and of the meaning of things.

91. Emotions of the second order, that is, emotion about emotions, may refer either to the emotions of the self or those of others. In the latter case, as the emotions of others vary our own vary, and the variation may be either direct, inverse, combined or joint. Were there any adequate unit of measure for emotion its course could be expressed by mathematical functions and graphs; its rate of change could be discovered at any point by taking the derivative, and maxima and minima, for given circumstances, ascertained. Where the intensity of one emotion is a function of the intensity of another either could be taken as an independent variable. Though the progress of the psychology of the emotions has not reached any such point we can consider the nature of some of the functional relations among emotions.

92. If an object which we love loves another object we tend to love that object provided the love of the loved object for the other object does not detract from the love of the loved object for us. When this love is diminished by the love of the loved object for another object we tend to hate the other object. Our hate varies directly with our love for the first object. Our desire for the loved object tends to increase owing to emulation, i.e. desire for an object because another desires it, and because of the fear of pain arising from the loss of the loved object and from accompanying feelings of contracted ego. Hence our love for the loved object tends to increase but not without resistance for the loved object now becomes a cause of pain and to a certain degree we both love and hate it. When the aversion of pain

exceeds the new intensity of love we tend to hate both the object loved by the loved object and the loved object itself.

93. When the object loved experiences pleasure we also experience pleasure unless the pleasure of the former detracts from the love of the object for us in which case we experience pain. Where the loved object experiences pain we also experience pain unless the pain is of such a nature as to bind the loved object closer to us in which case we experience pleasure. Each of these pleasures and pains, however, is mixed with its contrary. We tend to experience love toward an object which causes the loved object pleasure and hatred towards an object which causes the loved object pain but with the qualifications above indicated.

94. Our pride decreases as the love of objects for us decreases or their hate or indifference increases. Our pride increases as the love of objects for us increases since this conduces to greater power and self-importance. Our interest in ourselves increases as our pride increases and as our self-interest increases other interests become subordinate. Hence the love which we hold for others tends to become subordinate as pride, which may be called self-love, increases and although the object which causes us pleasure by increasing our pride may give rise to an emotion of love, this emotion tends to decline if the accompanying pride increases more rapidly than the love. There tends in general to be a relation of unstable equilibrium between pride and love. If our emotional self-sufficiency or independence decreases there is an accompanying contraction in our feeling of self-importance, power or pride, which contraction is painful. Conduct, therefore, which indicates dependence tends to be painful and where such conduct is evoked by a situation involving the love of a subject for an object the conflict is resolved in the one direction or the other according to the intensity of the respective emotions. It follows as a corollary that as the concern of a subject for the feeling of self-importance decreases, the capacity for genuine love increases. It is an exaggeration to assume a priori that this process has never, in any actual instance, occurred.

INTELLECT AND EMOTION

1. The essential thesis of these essays has already been stated. The present essay, therefore, will contain little more than a resumé of what has gone before together with a number of immediate corollaries. It will unfortunately, as a consequence, involve a certain amount of repetition for which the writer duly begs the indulgence of the reader. It is hoped, however, that in its unfolding such points as may not have been clear previously will find a more adequate elucidation. It is perhaps unnecessary to add that those who are acquainted with the point of view and have anticipated much that has preceded may, foregoing delay, pass the essay by disregarding further notice of it.

I

2. The endeavor to envisage not this or that department of being, but being itself, under the aspect of intellect, is philosophy and our interest here is the discovery of the emotional correlate of this endeavor. Before so proceeding, however, certain preliminary concepts invite consideration and in particular the concept of power.

3. Power is a relation. Relations are reciprocal or non-reciprocal, circular or linear, transitive or intransitive, multiple or singular, simple or compound, unique or repeated, universal or particular, internal or external, essential or accidental. These types of relation express themselves in various realms and appear as logical relations, ontological relations, mathematical relations, possible relations, actual relations, physical relations, temporal relations, spatial relations, historical relations, biological relations, perceptual relations, societal relations, psychological relations, economic relations, political relations and relations between these types of relations which are called interrelations. Interrelations ascend to the first, second, third—and so

on to the n th order. Each order of interrelations represents a system and as systems become progressively more inclusive interrelations approach the order of infinity as a limit. The relation of power appears in concrete things, actual objects or perceptual particulars. A has power over B, B over C, etc. Or A has power over B, C, D, etc. In the one case the relation of power is linear and transitive in the other it is linear and multiple but intransitive. In case C has power over B and B over A because of A's power in the reverse direction, the relation is transitive and reciprocal. Where the multiplicity of objects to which A stands in the relation of intransitive but multiple power has power over A because of the conditions of A's power over it the relation is multiple-reciprocal. Where the relation is multiple-reciprocal it cannot be unique; where it is linear-multiple it can be unique. Both can be simple or compound but there can be no universal-unique relation of power between concrete particulars. Hence when there are unique relations between particulars—and all particulars whether concrete-actual or possible-concrete involve an indefinite diversity of unique relations some of which are of power—they are not universal, i.e. all unique relations relating particulars with particulars are singular. Relations themselves, however, are either of universals or particulars and all particular relations relating particular things are unique. No unique relation, however, of particular things with particular things follows from the essence of the particular thing only. Nor does it follow from any essence only, since accidental qualities are involved, that its particularization in a thing in so far as concrete shall be unique. But only those relations which follow from the essence of a thing are internal relations. Therefore not all particular relations relating particular things are internal and some particular relations relating particular things are external. But all external relations of particular things are accidental hence all external relations of power relating particular things with particular things are accidental and no particular thing, in so far as it is this or that particular, is essentially related by external relations of power to any other particular thing in so far as it is this or that particular thing.

4. There are relations of power between the relations re-

lating particular things as well as between the things related for relations may have power over relations. But particular things and their relations enter into event-patterns and these event-patterns are called circumstances. Since there may exist a relation of power between particular things and particular things and between particular relations and particular relations there may also exist the relation of power between circumstance and circumstance. Where circumstances are related by the relation of power one is said to cause the other and the relation is said to be that of physical, mechanical or efficient causation. Physical causation is a descriptive term for the juxtaposition of events. The succession of circumstances so related is called fortune and the relation which relates them is called the power of fortune. Since any particular is a "this" or "that" and anything designated by those demonstrative adjectives is a component of a circumstantial series every particular thing is, considered in its aspect of particularity, involved in the power of fortune i.e. is an element in a circumstantial event-complex involving a juxtapositional nexus which, actualized in detail, gives a space-time order.

5. If a particular, A, is related by a relation of power to a particular B but not to a particular C it cannot be said that it is related to C by the relation of impotence because the absence of a possible relation is a negative or non-relation and a non-relatedness itself cannot be a relation either between things or relations for the non-relatedness of items of any sort would then involve relatedness and that which is non-related would, by the fact of its non-relation, participate in the nature of relatedness. Further, if non-relatedness is a relation, relatedness itself is a relation, from which it ensues that items can be related by relatedness itself without other relations; but mere relatedness, since it has no content as a particular relation of particular items, passes into non-relatedness and everything is both related and non-related and neither. The relation of impotence does not exist between A and C but between B and A for impotence is only the opposite of potency and the two are but the same relation envisaged according to its sense, i.e. its direction. But power among particulars involves the capacity of one to modify the other, as

a body is modified by external circumstances. Hence if A cannot modify C, it may be objected that it is powerless or impotent with respect to C. The equation of powerless and impotent, however, is invalid since if there were only one thing i.e. being *per se*, that thing would have no power since power involves a relation, i.e. it would be powerless, but it would not be impotent since impotence like power involves a relation. If all relatedness is retracted nothing has any power and everything is equally powerless.

6. Examining power in particular things we find the category of causation but it is questionable whether this is power in any fundamental sense—and, in any case, it is not exclusive in its participation in that relation. To discover the essence of power it is necessary to search deeper and derive its status from a more basic category. This category cannot be more ultimate than relation itself. The primary species of relation, however, which extend through a world beyond that of particulars and expresses the nature of power in its universal aspect is that of dependence. This is one of three cognate relations, namely, dependence, independence and interdependence each of which involves the same relational form and this form is power. In a multiplicity of terms, where the position, retraction or modification of given terms involves the position, retraction or modification of other terms, a functional relation arises generating a dominion of items and a correspondent universe of discourse through which extends a reticular system of determinations issuing primordially from the position, retraction or modification of the given terms and manifesting itself in the relation of dependence when the sense of the determination is expressed from consequent terms as bases, of independence when the sense of the determination is expressed from the given terms as bases and interdependence when a complex of items involves a system of reciprocal dependence. It follows that all species of dependence are species of determination and all species of determination are species of necessity but not that all species of necessity are species of determination for that which is independent or undetermined is subject to a species of necessity, since it is undetermined, and since necessity has no opposite this species of necessity

which is undetermined is free (since indetermination is a type of freedom) and may be called free-necessity, a category which applies only to an item which involves no relational subordination, and thus it is evident that a system of dependence or an integration of a multiplicity of systems of dependence does not, so far as the relation of dependence is concerned, exhaust the category of necessity and an exhaustive identity between the two cannot be affirmed, although there exists a relation of dependence itself between the relation of dependence and the latter category. Power is dependence under the aspect of necessity.

7. Dependence then, in so far as it is real, involves necessity, but in so far as it is apparent, contingency, for contingency is ignorance of necessity and the apparent, in some sense, participates in that species of ignorance comprehended by error. Apparent dependence is always partial; real complete, and dependence judged as partial is apparent. Apparent dependence issues from an epistemological relation which taken separately (this, however, is not valid) produces an opposition between the epistemological and the ontological which generates the same distinction in types of dependence; but the ontological itself embraces the epistemological and the relations of the latter even though involving error issue from determinations embraced in the former, and apparent dependence as a product depends on real or ontological dependence as a ground. Apparent dependence is hence dependence inadequately cognized and the power expressed by such dependence is apparent power. Such power is relative, mediate, conditional and related to terms not cognized in the totality of their relations. Hence the dependence is considered as partial; and the independence it implies is neither ultimate nor unconditioned. But all conditioned independence is mediated and partial and hence not exclusively possessive of power but partly impotent; the only complete status of independence and the only entirety of dependence which can arise, arises in conjunction with unqualified necessity, but unqualified necessity is participant only in logico-ontological relations and hence all real power is logical and only real power is logical, i.e. ontological. Real power is logical priority and real impotence is logical dependence and as apparent power merges into real its

logico-ontological nature becomes evident. Dependence relations, however, are linear or transitive and all in some sense enter into transitive dependence series. These dependence or power series disperse themselves out infinitely through the realms of the actual, the possible and the realm of essence and form.

8. The extension of power series through the infinity of ontological realms proceeds through diversified orders of dependence and in one instance manifests itself in the apparent-actual through a process of temporalizing individuation. This subordinate realm constitutes nature in so far as nature involves motion and physical relations, either generalized or in the special manifestations of physico-chemistry, astro-physics, geo-physics etc. to the sphere of biological phenomena where the power series of nature plays an important rôle expressed in the helping and hindering dependence-relations of the biological organism. Such relations originate in the requirements of organic equilibrium within the individual which depend, in turn, on individual-environment relations. These generate the group-environment relation out of which springs the individual-group dependence relation. These relations are accentuated in humans because of the inner complexity of their organic response system which exceeds in many ways that of other actual terrestrial organisms. The multitude of dependence relations in which all particulars, including humans, exist, i.e. the scope of their impotence, needs little descriptive emphasis. Certain significant things, however, can be said about the nature of human power.

9. The juxtaposition of event-series produces the phenomenon of causation and the histories constituting particular humans, through interrelations with other histories, come into the nexus of causation. Where the individual human or the group enters this nexus as an independent modifying factor it is said to have power. This power may express itself in technology or so-called power over nature and different organisms, or in power in the form of influence which an individual or group may have over another individual or group. The apparent nature of this power is rarely revealed because its cognition requires a more penetrating analytical process than is at the command of common sense. The reciprocal nature of the dependence-relation

between organism and environment, between the individual and the factors he is said to have power over is, for psychological reasons, neglected and the simple linear relation of man's power over other things emphasized. But this reciprocal relation is more subtle in its operation than any such simple conception would indicate and the ignorance of its subtlety gives rise to the popular illusion of the dominion of man over nature. This reciprocal dependence relation expresses itself in a variety of aspects the two most significant of which are physical and psychological. These two are not in any real sense severed. The former is manifested most directly in the economic relations of man and environment about the reciprocal nature of which there can be, with a little observation, no doubt. Economic relations involving production, exchange, and distribution are promoted by, and themselves promote, technology, i.e. the teleological application of inventions, instruments or processes—they may be either mechanical or psychological in nature—to problems of want-satisfaction. Here the modification of the terms of the relation is reciprocal for the character of the organisms is evoked by the character of external stimuli and if it modifies these, they modify it. Thus arises an economic quasi-determinism which is made evident in the correlation of character, occupation, environment and which becomes, in some instances, so predominant that individuals and groups express in their characteristic behavior little that falls outside of this relation. In this process of economic adaptation there is a kind of conflict between organism and environment and a competition between organism and organism which results, regarding human affairs (or for that matter regarding biological relations of other organisms as well) in various differentiations which affect profoundly the conception of human power held by common sense and a human is said to be powerful, among other reasons, because of wealth acquired in excess of others. Such wealth makes him a pivot in the wheel of economic determinism.

10. In so far as the dependence relations in which human organisms are comprehended involve affectional variation they are said to have a psychological aspect. Hence arises a species of power relation called psychological. That which we love has

power over us because we love it, that which we fear because we fear it and so on for other emotions. Our implicit and explicit behavior is modified by modifications in the thing and hence a dependence relation is set up between that thing and the organism. This relation takes many forms and operates continually on the subject, who is, for the most part, unaware of it. It forms, in general, the opposite aspect of linear unilateral physical dependence relations, which transforms them into reciprocal relations. That is: where a relation of physical dependence may be set up in one direction between two or more terms, a relation of psychological dependence tends to be set up in the other direction and the dependence relation joining the terms becomes reciprocal with greater or less degrees of reciprocity. In the relations between organisms of the same or allied species it is prominent and particularly among humans. And this accounts for the power of the weak and the weakness of the apparent strong. The human relation in which these characteristics show themselves most clearly is that called the master-subject relation which shall here be taken in its broadest sense referring to the master as one who influences and the subject as the one who is influenced regardless of what the nature of the influence is. This relation arises in numerous forms in every sphere of societal life and there are, in fact, as many different kinds of master-subject relations as there are instances of the relation. Influence, however, is either dependent on external relations or needs, or on internal modification and in the former case it is called physical and in the latter psychological. The former is illustrated by the power of the employer over an employee especially when the latter is dependent for his subsistence on the former; the latter by the power of an orator or a priest over an assembly. When external influence consists in force or on the withholding of necessities it is physical coercion; when influence consists in the excitement of fear in the subject it is psychological coercion. When external influence is effected without direct or tacit force the relation set up is that of coöperation; when psychological influence is effected by the stimulation of favor rather than fear the relation set up is that of persuasion. In the successive changes of cultures during the process of historical evolution there has, in some in-

stances, occurred a variation from physical and psychological coercion to coöperation and persuasion in public and private institutions. The change is accompanied by collateral changes which may or may not be desirable. Institutions using coercion have shown a tendency to be unsophisticated, brutal and honest; institutions employing coöperation have shown a tendency to be sophisticated, gentle and hypocritical. Since the power of persuasion depends frequently on deceit, either in its milder or more pronounced forms, its use has given rise to a very intricately developed technique of deceit which by the friends of common sense is frequently but erroneously dignified with the name of civilization. On the whole, however, it is probably a factor in social stability. This technique of deceit reaches its greatest state of refinement, however, not in its application to the persuasion of others but in the devising of pretexts and justification mechanisms whereby the persuaders may themselves succumb to their own ingenuities and thus add the eloquence of conviction to the subtlety of dissimulation. There are many men who cannot commit selfish acts without being convinced that they have generous motives and hence, instead of foregoing the acts, the first step to the accomplishment of their ends becomes the discovery of their own righteousness. When their native ingenuity fails them in this respect they frequently turn to the reservoirs of popular religion from which, by some means or other, they seldom fail to extract a species of inner peace.

11. Influence, external or psychological, is, from the point of view of common sense, the very expression of power itself. There are few pleasures sweeter than the extension of influence since it generally evokes a disproportionate expansion of the feeling of self. Wealth in excess to that of others is considered power and its power consists primarily in its augmentation of influence. The desire for the pleasure of increased pride arising from the augmentation of power is ambition. Since power, however, is commonly taken to be a non-reciprocal relation of humans over humans involving influence and frequently excess wealth, ambition seeks these means to power. And these objects as ends (excess wealth, honor, position, influence, etc.) are planted onto the desires of individuals by the formidable weight

of mass suggestion i.e. of universal convention. Thus men, in so far as they are dominated by common sense, tend to be ambitious. It is fairly clear, however, that the power which the ambitious man seeks is apparent rather than real since the very presence of his intensely self-directed ambition sets up a dependence relation between his subjects and himself in which his own nature is as dependent on them as they are on him. In short, the influence-relation, whenever ambition is involved, becomes reciprocal and as the intensity of private ambition increases the power of the subject decreases. Pleasure or pain may arise in these functional correlations but not power—for the emotional modifications of the organism are dependent on circumstances, not on itself. In the human relations of master and subject it is a rare individual who can tell, in terms of real power, who is master and who is subject. And hence we may add that what is held up by the current views as the power of man is little more than the manifestation and glorification of his impotence.

Wherein, however, lies the nature of human power it may be of some value to investigate.

II

12. In so far as the consideration of an item or set of items is propagated apart from the things those items imply, that consideration is partial and inadequate and the items themselves have, to a greater or less extent, the character of incompleteness. This applies to the consideration of particular things. The realm of particulars, we have seen, is a nexus of histories and these come into, or assume, the aspect of spatio-temporal actuality as they enter interconnecting awareness relations. These particulars, however, taken by themselves, are abstractions, in the sense of the term in which we have previously used it. They exist in, and imply, a formal order from which they derive their characters and on which they are dependent (*Essay on The Universal and its Relations*, par. 3). The pure particular is nothing other than a contradictory expression and hence an instance of apparent language. The universal which is the essence or being of the

particular is implied by the particular but, on the other hand, the nature of the universal is such that it places no determination whatsoever on the number of its modifications. Hence an infinity of particulars issue in logical consecution from the universal. The integration of items thus indicated might be called vast but ontologically it is neither great nor small for there is nothing to compare it to. The cognition of particulars by perceptual processes omits their formal aspects and hence gives a picture of incompleted histories manifesting themselves in a space-time world which in its momentary totality is called the universe. As this cognition is supplemented by that of intellect the universe discards its spatio-temporal character and becomes part of a wider realm which is neither fixed nor mutable (because these qualities are derivatives of time) but non-temporal. As things are considered under their universal aspect they lose the partial and fragmentary character which their spatio-temporal conditions involve. And as cognition passes from perception to intellect, cognized objects assume a non-temporal status (cf. *Essay on Space-Time*, par. 8). As this occurs their logico-ontological relations become more and more manifest and the process by which they attain their manifestation is thinking. Individual objects are thus, as this process develops, seen to involve a compresence of particular and universal elements extending into an endlessly variegated realm of differentiation.

13. The ascending orders or interrelations in this nexus comprehend those involving the relations of particulars among themselves, of particulars with universals and of universals among themselves. The content of relational universes thus established enlarges as universals of more and more fundamental nature are considered. And the thinking which cognizes these universals becomes progressively more concrete. It passes from the awareness of fewer and more superficial to that of the greater and more primary aspects characterizing the objects of thinking. Now we have seen that no universal is a class. Classes exist only by grace of universals. They are, taken in themselves, abstractions just as the pure particular is an abstraction. It is only when the relational complex involved in the implication of the universal is not envisaged that its ontological significance is ignored

and refuge is taken in the abstract disconnected particular or in the class. Now as these relational complexes involve infinities of dependent particulars which extend out into a nexus of possibility unending in its scope, they also coalesce by dependence relations, realizing rational priority and posteriority, into universals of greater and greater independence. The logico-ontological dependence-relations of universals constitutes their relation of implication. Any one term, regardless of what it is, implies others, since without others, it is logically incomplete. This implication itself implies the relational systems called universals. The implication of the universal involves a descending order which envelopes that which is dependent on it, and an ascending order enveloping that on which it depends or which it presupposes. The implicative, relational orders thus set up extend to limitless degrees in an infinite number of interrelated realms in which, however, there is an integrative ascent to progressively more independent universals involving primary categories which are themselves mutually dependent and imply an order at once all-comprehensive and independent. Now the derivative meaning of any item, universal or particular, resides in its implication as that implication is expressed in items dependent on it, and therefore, in proportion as the comprehension and ascendancy of relational orders increases, there is a constantly enlarging accumulation of meaning. This accumulation of meaning progresses far beyond all actual visible universes (including, among other things, all the dramas that work themselves out in human affairs) to an integration of unlimited realms of being under the logico-ontological form of the independent. In so far as it is considered in this culminating integration, it is objective mind. It is owing to the presence of objective mind that the discursive thinking which thinks itself through particularized awareness is possible and the method, which is the essence of thinking, finds its ontological realization in the limitless penetration of being by objective mind. It is here to be understood that objective mind is no mysterious entity but a clearly cognizable relational system which becomes complete when it becomes infinite, i.e. coterminous with the differentiations of being. This manner of expression must, of course, unfortunately, be somewhat figurative for

we are referring to a non-temporal order and to say that it becomes is, strictly speaking, inadmissible. Objective mind is complete and by logical determination can be nothing but complete. Discursive thought, however, attains more adequate cognition of objective mind, i.e. tends to become complete, in proportion as it envisages the relations which that mind involves. But discursive thought in its genuine nature i.e. in its basis in reality, is itself non-temporal and, in fact, is one with the rational liaison of objective mind.

14. The rendering manifest of objective mind by discursive thought is a dialectic process which attains ever greater precision, comprehension and integration. The revelation of objective mind by this process constitutes the dialectic movement of the history of thought. When discursive thought passes, in this dialectic process, over the bounds which delimit special dependent spheres of being, and integrating these, ascends to the cognition of a logical order embracing the whole realm of being—i.e. to the synoptic insight of the realm of being as an instantaneous whole—concentrated in power series which converge to ultimate sources, it passes from discrete departments of cognition to philosophy. The gap between philosophic and other types of cognition is qualitative and absolute. When discursive thought passes into philosophy it takes on radically different characters from those it possessed either in current opinion or science. It becomes at once synoptic, concrete and non-temporal i.e. it becomes rational. This passage to philosophy, however, does not imply a completion or perfection of knowledge. Such is for the gods only and philosophy is ever developing. It implies the entrance of thinking into a comprehensive relational field whose integration is known but the cognition of which admits of infinite expansion and precision. And thus the dialectic process develops to ever finer and finer delineations, and after the saltatory advance to philosophic cognition, that cognition is capable of unceasing growth and articulation, and of indefinitely improvable re-expression. It goes from dependent orders to the nature of the independent, unique and alone concrete, taking up in its infinite aspects all dependence series—series which reach in descending order through the whole realm of implication. And this

is the ultimate locus of the power series. It involves all science, all valuation; it embraces all visible universes as well as the limitless permutational orders of possibility and the relational systems of universals extending through them. And as the individual intellect pursues the dialectic which transmutes itself into the clarified vision of this order it becomes fastened and focussed on a unique and consummate species of beauty whose power exists in no fragmentary region of being. Esthetic and intellectual contemplation coalesce and they bring with them a successive integration and definition, a mutually intensifying colligation of the desires, orientated through the commanding attraction of rational and esthetic value, towards the attainment of philosophy. And philosophy acquires a new and hitherto unrealized rôle. It becomes at once a song and a minstrel—a divine singer in the notes of whose melody hovers a charm which haunts the farthest recesses of the mnemonic awareness and thence, drawing forth and collecting all of the cumulated insights of a developing mind, unites them into an immediate and palpable intuition of the intelligible order within which that mind has its being. Thus as the awareness of the individual ascends the stairway of intellectual cognition there accompanies it a correlative modification of affective attitude and a concomitant growth of emotional meaning. Love, identified with the primordial striving which is the organism itself, and intelligence, coalesce; and in this coalescence alone lies the realization of emotional freedom. What the nature of the effect is, which this clarification has on the contemplating mind we cannot pretend to describe. But that this effect is not without power is indicated by the variety of expression which men have given to it. Perhaps this power can no better be indicated than by the citation of a brief passage from an Italian Platonist of the renaissance. We take the liberty of translating the Latin of the author. The passage proceeds as follows: "I learned then after long syllogizing that it is not through the universal proposition of class that an approach to the divine is possible for this is but the logic of existence. We must turn to another logic, to a soundless music which is the logic of essences and which is the pathway to the inner nature of reality. It was then to the pursuit of this that I gave my thoughts

and bent my efforts, and listening and pursuing I saw the world of things issuing from ever higher realities until the universe of being spread out before my gaze and I stood fixed and immobile as before a vision of timeless creation. But what further appeared to me I cannot say; I refer simply to the force of an illumination which struck the mind with a transcendent clarity of sight—a reverie—within which the soul, loosed and freed from the ligaments of mortal existence, eager and burning for the sight of coördinate reality, lifted itself upwards and encircled, through a far-extended perihelion, the intelligible source of all forms and all things, from which it beheld, streaming outward with inexhaustible splendor, the entire succession of essential and existential realms.”

15. The author of the foregoing, to resume, no doubt indulged himself in a certain exaggeration of expression. His soundless music of the logic of essences is unusual and he passes from hearing to sight in a not altogether congruent way. He did, however, indicate, in the language of his time, the cognitive effect generated by the developing dialectic of universals and suggested something of the concomitant of discernment which accompanies it. This effect, namely, the envisagement of being under the aspect of intellect, we shall call the absorption of the awareness in the cognition of ontological rationality.

16. Now our object has been (Essay on The Intrinsic Value of Intellect, par. 67) to indicate the derivative value of intellect in the attainment of emotional freedom. Emotion, however, is directly modified, and only directly modified, by other emotion. We may, therefore, proceed to the investigation of the effect which the emotional correlate of rational cognition exercises on the rest of the nature of the individual and, in particular, its contribution to the attainment of freedom.

III

17. (I) The attainment of intellect is the transmutation of desire.

The event-series that comprehends the growth and direction of desire accompanies the event-series which composes the

growth and differentiation of the physiological organism. The two processes are, in fact, one and the same and it is by an arbitrary distinction alone that they are represented as different; they are separate and opposed only as imaginative constructs (Essay on Cosmology II, par. 26). In the organic growth to which we refer, desires are engendered and pushed forward and the subject becomes progressively more aware of them; they arise just as the beating of the heart or the responses of the sympathetic nervous system, i.e. before they are known. In the process of their actualization they pass from a stage in which they are generalized and vague to one in which they are distinct and specific. They become directed towards selected objects. The ontogeny of the organism involves, thus, the origin, multiplication and specification of the desires. The objects, however, to which the desires are directed vary as the ontogeny unfolds and one of the factors which determines the direction which they take is the point of view of the subject. Things are desired not on account of what they are but on account of what they are envisaged to be. Desire is determined not by objects themselves but by the way they are contemplated. If, for example, a hungry man sees an object which looks edible he forthwith desires it. If he learns that it is, instead, an active poison he not only ceases to desire it but entertains aversion towards it. The change of desire is the consequence, not of the object but of the man's knowledge about the object and as this knowledge changes his desires regarding it change. They do not change through any coercion or suppression but simply because the object when looked at in one way arouses emotions e.g. love or attraction, which are different from the emotions aroused, e.g. aversion or fear, when it is looked at in another way. A component, therefore, of the emotional correlate of any intellectual outlook is a conational correlate. We desire objects in terms of the aspects under which we consider them; and the same object becomes or ceases to become an object of desire according as we view it in one relational context or another. Hence a child desires one thing, an adult another—and an organism desires one thing at one time under one point of view and a different thing at another time under a different point of view. The nature of a thing as an

object of desire is, as we have said, determined, in part, by the intellectual perspective of the subject. And as perspectives change the objects of desire change and this change occurs in certain definite ways. The desire tends either to be eliminated, to be intensified or to be diminished. Of the ways in which these changes are brought about, two are of particular significance. (1) First the object of desire is shown to stand in a valuational status, with regard to the subject, different from that of a previous point of view; and (2) the object is seen to stand in different relations of necessity to the rest of things including the subject. What we recognize cannot, of necessity, be otherwise we tend eventually to cease to desire in its impossible aspect. If one (to take a somewhat exaggerated example) should desire to make a triangle with more than one right angle this desire, on the discovery of the logical nature of the triangle, would be modified or eliminated. If the nature of the triangle were clearly seen the desire would simply pass to some other end or object. And likewise if men desire many things which are impossible, one cause of such conation is that they do not perceive the logical necessity of their impossibility. This, in no sense means that men do not, in fact, desire impossible things. That they do is beyond question. It does mean that they do not discern the logical impossibility of a considerable multitude of things which they, in fact, desire. The desires, for example, expressed in the wish that a human who has died shall live, or that a past act shall be unacted—and such desires gain great intensity—might well be modified or changed to different emotions if the subject saw all of the implications involved in the accomplishment of them.

18. And so as men see more they desire differently. The earliest desires refer to things directly pertaining to bodily functions. Then arise desires directed towards other organisms of the same species. These are reinforced by suggestion and emulation. Both of these classes of desired objects are constituted of particulars and bear the characteristics which no actual particulars can escape i.e. they are variable and evanescent. They may be ranged in sundry valuational scales; they can, however, never be freed from the fluctuating particularities of their nature.

19. Now as the conative impulses multiply (whether they are directed towards particulars or not) they become differentiated into desires which are primary and desires which are subsidiary. Subsidiary desires are those which arise because of, and in subordination to, primary desires e.g. we desire a fork not for itself but because we desire to eat with it. The desire for the fork is subsidiary to the desire for eating, and so on with regard to the other desires. The real nature of the desires of a human, the character of the individual, in fact, is seen in his primary desires, since all subsidiary desires exist as subservient and relative to these. Now as the universe of things is viewed under the aspect of intellect a vision arises, as we have seen, whose power over the awareness is imperative. It focusses on itself as a center the whole psychological nature—cognitive and emotional—of the individual. With every advance of the dialectic of discursive thought, furthermore, this vision is enlarged and the rational beauty of the intelligible world on the one hand, and the necessity of things in their non-temporal aspect on the other, is recognized. And since this cognition is cumulative, and since every advance in it is accompanied by greater pleasure, the longing which it sets up is likewise cumulative. This longing, however, competes with other desires for primacy. But desires, as we have seen, are modified by concurrent desires, and they possess a relative dominance only in terms of other desires. Hence as the longing for rational vision cumulates it absorbs and engulfs, in its own expansion, all other desires and a basic re-orientation in the conative nature of the man takes place. The desires for particular things—desires which were previously dominant—rearrange themselves and become subsidiary to this desire and this desire becomes primary and autonomous—the apex under which all subsidiary desires are coördinated. This colligation, integration and coördination of the longings under the ascendancy of the striving for synoptic rational vision we call the transmutation of desire. Its realization is the free and joy-giving activity of the organism in the fullness of its powers, directed toward an end whose intrinsic value is sovereign and can never be exhausted, and whose derivative values penetrate through and enrichen the whole contributory web of otherwise

less significant events which constitute, as a manifested history, the life of the organism.

20. (II) The attainment of intellect is the transcendence of the ego.

The transmutation of desire, to which we have referred, is accompanied by a significant metamorphosis in emotional attitude, namely, a movement away from the self-regarding and self-exalting emotions. This does not mean that the subject reclines into any sour or self-pitying state of resignation which, as we have elsewhere pointed out, is not self-transcendence but merely an impotent grovelling in thwarted pride. Nor does it designate any sentimental annihilation or simulated emaciation of the desires. An organism without active, emphatic and persistent desires never can and never will attain any values worth consideration. What it does signify is a re-directing, a re-orientation of the desires through a transformation of the point of view and together with this, a discovery of the relative status, within a world of rational order, of the subject itself. The self-regarding and self-exalting emotions (cf. *Analysis of the Emotions*, par. 62) are no doubt deeply ingrained in the biological nature of the organism and cannot be brushed aside with a few homilies about virtue and humility. They are connected with visceral responses more primitive than any long circuit nervous impulses passing through the cortex and have acted and act in the accomplishment of the competitive survival of individual and group. They arise with an immediacy which precludes awareness of them until they are well advanced in their expression and their modification by a point of view, in so far as this is realized, is only accomplished when the point of view has become clarified into a primary and active component in the psychology of the organism. It must be actualized and enwoven through the whole order of habit responses which eventually grows into the character of the individual. The emotions to which we refer i.e. the self-regarding emotions, are not, in themselves, either laudable or condemnable—they are simply items present, like any other motions, in the world of nature—but they are for the most part, either trivial

or painful. They compose the basis of the reciprocal dependence relation which establishes and augments the impotence of the individual dominated by them. And even when they are associated with pleasure the man who has understood their nature avoids that pleasure because it is purchased on the one hand, at the cost of intellectual blindness and on the other, of circumstantial dependence. Ego-expansion or the feeling of self-importance brings with it the cognate defensive or aggressive emotions of fear, anger, righteousness, shame, envy, partiality and private ambition. These emotions distort value-judgment producing over-estimation or undue depreciation. They, in fact, hide values from men. They emphasize a perspective which sees the self as discrete and separate from the rest of the order of being and they exaggerate, thus, the relative importance of the given particular; they envisage things in relation to this particular as being contingent and as protagonistic or antagonistic in their contingency.

21. The dialectic advance, however, to the cognition of things under the aspect of intellect shows a rational coördination of all the modifications of being in a structure which extends without limit to constantly wider and more inclusive unities. The separation and discreteness of particulars, including the self, is seen to be illusory and the relative importance of that self, regardless of what tributes are paid to it or not paid to it by men, can never be greater than that pertaining to a particular thing in an infinite rational order. (The heaven-storming of romantic individualism is empty; self-greatness is attainable but not by fretful and indiscriminate self-emphasis.) And, thus, as the point of view of the subject gains in logical integration and precision, the contingency of things which emphasized their antagonistic or favoring character passes over into the direct cognition of a necessary relational order, under which they manifest themselves in their non-temporal, causal and connected character.

22. But these changes of point of view with their associated emotional correlates are subsidiary to a more essential change. The psychology of an organism is never an emotional vacuum and the departure of one emotion or emotional complex is only effected by the substitution of another. Now we have seen that

the attainment of intellectual vision is accompanied by the absorption of the awareness in the expansion of knowledge and by the transmutation of desire. The motives for the presence and intensification of the emotions directed to the self as a discrete particular tend to vanish and there is, with this enlargement of vision, a passing over of the self-regarding passions to the free esthetic and hence self-oblivious emotions. And this oblivion in the esthetico-logical contemplation of things under the aspect of intellect we call the transcendence of the ego. It is not contrition but blitheness and it is effected not by renunciation or self-abnegation but by joy and forgetfulness concomitant with the orientation of the striving which constitutes the essence of the organism i.e. of love, on a clearly discerned and non-mutating object of value.

23. With respect to the transcendence of the ego certain comments are here in order.

First it is not humility for humility is merely pain connected with the contraction of pride and is hence a self-regarding emotion. This emotion, namely, humility, is, in fact, the reverse side of egoism and is more or less intense as that emotion is more or less dominant. Those, therefore, who advance their humility as an object for approval and insist on humility in others, are in fact, only advertising the urgency of their own pride. Or they may be using their humility as an agency to ensnare the affections of those who relish abjection in others. Where the transcendence of the ego is genuinely achieved there is an attitude which is neither concerned with the humility of the self nor the pride of others. These matters are utterly irrelevant to the important thing and that is the actual attainment of value. There is also, needless to say, a disappearance of the endemic emotion of self-righteousness which is nothing other than an ego-exalting passion consisting in pleasure together with pride expansion based on flattering judgments of superiority regarding the subject's own desires and motives. An individual, in other words, who avoids the last named emotion and acquires the attitude to which we are referring becomes intelligently satisfied with what he is, where he is and when he is—and with his position, whether of

significance or insignificance in the judgment of other men. He attains a rational independence which is not based on self-exaggeration nor self-minimization but on a direct recognition of the relative meaning and scope of the self with respect to other things. He can thus be at peace with himself and with his strivings as far as this is realizable for a particular and when such peace is well-founded it is more valuable and more genuine than any possible alternative advantage. The praises and denuncements of other men, in consequence, mean little with regard to his essential attitude for he realizes that they might as well be the praises or denuncements of a parallelogram because its diagonals bisect one another or of an angle inscribed in a circle for having, as its measure, half its intercepted arc. He, like any finite thing, is what he is, as a part, because the whole is, what it is, as a whole. And he is aware, finally, that if he lives within the range of circumstances factually governing his present and is pursuing philosophy and assisting, such as he can, anyone else who so desires, to pursue it, he is working towards the highest value realizable in any realm of existence or being and that there is neither anything greater to attain nor any necessity for such, since this alone possesses a sufficiency which, in its abundance, cannot be exceeded.

24. Secondly the transcendence of the ego does not consist in submission or docility to others, who, motivated themselves by personal ambition, endeavor to involve the subject in the promotion of that power. This, rather than being a merit, is a form of impotence. The man who has perceived the meaning of intellect endeavors so far as he can to subordinate himself to it for it leads to the world of values. And he is naturally ready to share with others what in this way it is possible for him to attain and to join unreservedly with those who are actually engaged in the realization of such values. He does this under such conditions and in such relations as circumstances permit and his action becomes integrated to this end. But if he is perpetually at the behest of men whose intellectual vision is stationary and who throw out an appearance of scientific interest merely to hide or promote their primary motives which are shot through with the

little nettles of private ambition, the prosecution of his end (regardless of what he may or may not desire) is *eo ipso* nullified and the meaning of his existence evaporates into futility. And, therefore, a philosopher will put up with any hardship if only he can pursue the dialectic of his thought. There is nothing so irritable to the man who is actuated by the propulsions of personal ambition and who is, by straightforwardness or underhandedness or both, trying to weld an organization under him which will keep shoving him higher and higher in the scale of personal power, as a man who is unaffected by a similar ambition, since the latter, rather than responding to, avoids the lures that are set for his pride and rather than hoping for favors fears the loss of philosophy more than anything that can be taken away from him. One might hope for philosopher-executives and administrators just as Plato hoped for philosopher-kings but, with a very few rare and, in fact, noble exceptions the expectation of the one—since private ambition, especially when it is intellectually barren and has nothing to offer, or even strive for in this respect, will always wrangle for positions of power—is about as chimerical as that of the other.

25. Lastly the transcendence of the ego tends to determine the consideration which one human has for another. It removes the vindictiveness and craving for self-importance expressed in the meddling of what is called moralism, e.g. in the erection of sumptuary laws, in gratuitous interference with the affairs of others regarding arbitrary matters not concerned with primary social order, in the joy of aspersion, of meting out condemnation and finding some poor wretch on whom pain can be inflicted without twinging the conscience. It makes the *Schadenfreude* which comes with this appear to be a forlorn sort of pleasure. There is a recognition of the pathos, the necessity and the tragedy of human characters and circumstances. Men act and have their emotions according to the nature and the limitations of their intellectual vision and a man can no more remove himself from these conditions than he can step out of his skin. Consequently the endeavor of philosophy is not to despise, much less to execrate, but to understand—and where possible to enlighten.

26. The transcendence of the ego, as we have said, renders irrelevant the self-directed emotions and promotes, consequently, a disinterest in the difference-judgments of superiority and inferiority which these emotions set up, whether regarding self-attributed virtues or otherwise. If such judgments are fancied to apply they are, nevertheless, of no significance. Frequently it is heard that an individual or group longs to be the best in a given activity. This may result in valid and generous rivalry, or it may degenerate into personal and silly contention. To a philosopher, who is such, it is beside the point; he desires to advance the dialectic of thought as far as possible with the maximum expenditure of his strength regardless of the attainment of others (i.e. whether it is great or small) and he would, in fact, wish that everyone were a better philosopher than himself. But, as is plain, it is not being better or worse than some one else that is significant; it is the value attained alone. And if an individual can only be induced to strive for value because he thinks in so doing he can make himself better than some one else his outlook is obviously too intellectually trivial to call for refutation.

27. A further significant consequence of the lack of concern with difference-judgments is the disappearance of the psychology of caste. The artificial barriers of caste-differences lose all force. The extraneous conditions of a man's life become irrelevant to the judgment about and attitude towards the man: whether he is black or white, rich or poor, from one country or another—all have little meaning. If, however, he is desirous, in such a way as suits his nature, to throw his efforts into the promotion of the dialectic march of knowledge, his presence is a matter for appreciation. And, in any case, whether he has this desire or not, he is not a subject for the self-complacence of condescension nor for the insidious egoism of righteousness but for the sort of humor and regard which is, in short, geniality.

28. (III) The attainment of intellect is the emancipation from circumstance.

Where a particular is related by actual i.e. space-time, relations to other particulars the nexus of relations so established is called a circumstance. Where the other particulars determine the existence or modification of the first particular the circumstantial relation is one of dependence. When one of the particulars is an organism, the organism is said to be dependent on circumstance and the nature of this dependence varies with the nature of the organism. As the organism is more complex and made up of a diversity of parts it is affected in a wider variety of ways and its dependence on circumstances becomes more complicated. Objects in so far as they are simply physical are dependent on fundamental mechanical relations. Objects which are biological as well i.e. objects which are organisms, are subject to two additional types of dependence which are themselves interrelated and which involve a series of subsidiary dependence relations. These types are constituted by economic dependence, on the one hand, and psychological dependence on the other and it is the latter which here concerns us.

29. Psychological dependence prevails when the emotional condition of the organism is determined by circumstance. The organism is thrown at birth into an environment which consists of a galaxy of stimuli, and the greater its capacity to respond the more numerous and effective the corresponding stimuli are. These stimuli are particulars (or groups of particulars) and since particulars are in a constant state of flux the emotions dependent on them are in perpetual variation; and thus the instability of particulars plays on the emotional fibres of man, as a pianist plays on his piano (with, however, no doubt a little less music). A variation in the one evokes a corresponding variation in the other. The hopes, fears, sorrows and joys of the human fluctuate with circumstances since his desires, ambitions and longings are focussed on them. The organism is drawn hither and thither according to the varying strength of stimuli and it is blown about among circumstances like a snow-flake in the wind. And as the stimuli which agitate it approach from different quarters conflicting longings and inclinations are set up and hence scarcely any desire remains, the satisfaction of which, does not involve the dissatisfaction of other desires. And, for this

reason, pleasure dependent on circumstance is rarely devoid of marring annoyance and is only occasionally complete. The pain of consternation or conflicting desires varies with the intensity of the desires involved, but in the ordinary course of life does not pass the bounds of tolerability. At extreme moments, however, under the stress of circumstance it may and does increase to the chaos of a waking nightmare. The variety of responses of which the organism is capable lead thus, in the complex of circumstances, rather to the disconnectedness and fragmentation of desire than to its unity and integration, and they accelerate the process of conflict. But where, on the other hand, the environment offers no stimuli at all, or only few, for affective expression, the blocked emotional energy establishes the painful condition of boredom and the organism strikes about for circumstances which will release its emotions. It is thus, either in the one case or the other, at the mercy of its unstable equilibrium with event-circumstance i.e. of fortune, and from the power of this no particular can completely free itself.

30. Nor does the attainment of intellectual cognition liberate a man completely from the circumstantial dependence to which we refer. In a physical world of particulars no given particular is removed from its reciprocal dependence relations with others. Such cognition, however, does definitely modify the psychological dependence upon circumstance which arises from its determining power over the emotions. With the advance of the dialectic of thought and the raising of the level of awareness to more adequate cognition a fundamental change occurs in the emotional correlate associated with the point of view of the subject. The nature and reasons for this we do not need to repeat. With the absorption of the awareness in the progressive contemplation of the logico-ontological nature of reality there is a redirection of the desire towards the enlargement of rational vision and concomitantly with this a continuous and releasing activity of emotional expression. With the transmutation of desire by which it passes from particulars to the longing for this cognition there is an integration of the subsidiary desires into a dominant primary longing and the fragmentation of desire—its splitting up and conflict—declines or vanishes. With the tran-

scendence of the ego which accompanies the esthetic envisagement of the logical unity of being there is a recession of the self-regarding emotions, pride and private ambition with their attendant pleasures and pains. And as these things are accomplished, the chains which bind humans psychologically to the flux of events are dissolved—desire is aimed not at the fluctuating particular but at the all pervading beauty of rational form—and this dissolution of desire from the reign of chance and particularity we call the emancipation from circumstance.

31. Now regarding this emancipation certain comments will not be found irrelevant. It is a subject upon which there exists not a few common errors. In the first place it is very easy for a man to deceive himself as to his freedom from and his power over the variation of fortune. But any such error merely augments his impotence. One of the first and commonest errors in this respect is the attribution of merit to the self for advantages largely due to circumstance. Where the subject commits this error he is rendered doubly impotent for he enters situations ignorantly, thinking he has power which he has not. It is one of the most difficult things for any man to foretell what responses unusual stimuli will evoke from him and the man who has genuinely attained an emancipation from circumstance is not the one who exaggerates his strength but who understands his possible weakness. The former generally regards as unmitigated treason the bare thought that he has any fallibilities.

32. Secondly the emancipation from circumstance, i.e. the attainment of philosophic cognition, is itself dependent to a certain degree on circumstance; the event-series leading to this attainment issues in the result which it does because of its origination from other event-series beyond the control of the individual. The influences on a man's life are, after all, largely the products of circumstance and if these influences lead to the realization of rational vision, circumstance has not been wholly absent from the process. There are extensive grounds for thankfulness and exceptionally few for the self-important pomposity or the megalomania characteristic of second-rate geniuses. But most fortunate of all will a man consider himself who has found

a good teacher, since it is mainly in this way that he comes to realize wherein the values of his existence lie and not only learns to know what the man imparts to him but, through the inner development which is thus awakened, to know himself.

33. And what applies to the individual in this respect applies to the group. The importance of societal events consists in their value-bearing power. Their value-bearing power lies in this capacity to extend the vision of things under the aspect of the intellect and to actualize, consequently, the emotional correlate which such extension involves, namely, that which we have just considered. Hence those societal events which do this are important and those which do not or which hinder this result diminish to that extent in their importance. The events which primarily attain this result are the extensions of the dialectic of discursive thinking as it expresses itself through the medium of individuals. Thus, for example, the publication of Spinoza's *Ethics* was an event more important and infinitely more enlightening than all of the economic and political upheavals that have occurred since. One of the clearest indications, finally, of the gap between philosophy and common sense is the type of event to which the former attributes importance as evinced in the expressions of men who have developed it, and that to which the latter attributes importance as evinced in the journal and newspaper.

34. Thirdly a complete emancipation from circumstance for a particular organism is neither attainable or desirable. The conditions of a man's existence are such that he defeats the very values of that existence if he considers himself as a god. There is a certain meaning to Pindar's remark that it is better for mortals not to strive to be Zeus. The gods are not subject to circumstance; men are—and if they try to picture themselves as if they were not, or as if they had what is called free-will, which even the gods themselves do not possess, they merely delude themselves into endless folly. But the variation of emotion with circumstance is itself not without some value. It loses this value only when the dependence of the individual is complete and untempered by the mitigating factor of adequate cognition. It is then that the human is tossed about in the world of particulars

like a wisp in a hurricane and is helpless before the mutations of chance. Otherwise this variation provides a needed catharsis of the emotions which is valuable even though it is not devoid of pain. The physiology of the emotions is never stationary. When it approaches a stationary condition owing to lack of proper release there is an accumulation of discomfort which we have called boredom—the organism acquires the psychology of a man impressed into forced inactivity. But boredom is as much a form of impotence as any other type of pain and in so far as the individual is subject to that affliction he has, by no means, attained emancipation. In so far, therefore, as the come and go of circumstance sublates boredom it is not valueless even though its values may be moderate or diminutive in significance. A considerable number of the irksomenesses of existence have a psychological meaning of which their subjects are neither aware nor are ready to admit.

35. Fourthly there is the superficial notion that the emancipation from circumstance—the freedom from the dominion of particulars—eliminates affection for external things and in particular other humans. This criticism merely issues from a misunderstanding. It is, on the contrary, rather because of the emancipation from circumstance, where this condition is attained, that men can endure, without faltering at appearances and without changing in attitude when circumstances seem antagonistic to themselves, the vicissitudes involved in the love or attachment of one human for another. It is owing to this that men can attain some emotional liberation from the calculatory advantage-weighting, conscious or unconscious, everywhere else prevalent, and can consider one another outside of the scope of the self-directed emotions i.e. as ends and value-bearing personalities and not as tools and instruments; it is owing to this, in sum, that one man can regard another for his intrinsic nature and not as an expedient to other things. But a man whose hopes and fears are chained to external particulars will vary his loves and his hates, his associations and his friendships, and above all his pretexts for loving and hating, with the variation of the things which command those hopes and fears and he will finally, as occurs not seldom, cease to recognize any loves which are not instrumental,

which are not, as the expression is, coincident with his interests. And as his interests change so, with automaton-like regularity, his emotions change.

36. Lastly it is to be said that the emancipation from circumstance is no fantastic sublation of the demands of nature. It is simply the effect on the emotions, of a steady vision, a recognition of the play of necessity in circumstantial change, and a definite knowledge of the end for which one is striving. Philosophic vision will not keep a man from starving, nor keep him warm in low temperatures, nor prevent him from having a toothache, nor impede any one of a countless number of similar physical exigencies which may occur to him. That some men fondly suppose it is obliged to have such power only indicates how far they are from any understanding of the thing itself. However, as no one in his senses ever made such claims either on it or for it, it is unnecessary to expand the point. It can only be added that where circumstances demand the suffering of pain the presence of philosophy—which reveals the pain not as an incoherent item but as connected with a whole order of external relations—will assist the man to endure it with such fortitude as he commands. While philosophy, however, has this consequence its meaning in no sense consists in its functioning as an anodyne for existence but rather in its presence as an end for which existence itself exists. Philosophy exists for the sake of men, only in the sense that it teaches them the essential bit of knowledge that they exist for the sake of philosophy.

IV

37. In examining the emotional correlate of philosophic cognition we find that we have also been examining the nature of human power. This latter does not consist in the consummation of private ambition, in ostensible success, in influence and in the things which bind the emotions of the human to objects over which, by common sense, he is supposed to have power. For these objects through the urgency of the self-directed emotions which

they control merely augment his impotence. It resides rather in the freedom which obviates, which sublates these emotions and causes the dependence relations which they set up to decline. No organism, since it is a finite particular, of necessity to some extent passive in a world of inter-acting particulars can completely achieve this freedom. There are, nevertheless, ranges of degree within which it can be attained and its attainment depends on a single process whose incorporate aspects are intellectual cognition and esthetic contemplation. The power of a man depends on the kind of thing to which, and the manner in which he responds, and these depend on his logical perspective. As the latter gains in precision, extension and integration the man passes from impotence to power. And, in sum, power over the self and power over nature lies in one thing and in one thing only, namely, dialectic; and it is in vain that men will look for it either in the mechanics of applied science, physical or social (which without great improbability may all but annihilate the species), or, on the individual side, in the thirst for private influence.

38. Power consists in freedom and freedom, we have seen, is divided into two parts, namely, the freedom of intellect which is enlightenment and the freedom of the emotions which consists in the integration of desire and its orientation towards genuine values. The nature of the latter, as the derivative value of intellect, was the subject of our immediate inquiry and we find that it is composed of the factors indicated above, namely, the absorption of the awareness in the cognition of objective mind, the transmutation of desire, the transcendence of the ego and the emancipation from circumstance. These factors produce an internal re-orientation of the psychology of the individual. The strident shriek of discordant emotion resolves itself into an ascending harmony of coördinated strivings and these, in turn, coalesce with the discursive reason which is reflected onto the thinking of the individual from the vision of a rationally connected order of being. And with the advance of the dialectic which reveals this order comes the revelation of value: value which is not only such for all actual but also for all possible particulars, since there is no realm beyond this—i.e. beyond the

implication of the independent—to which any possible particular can penetrate or which can possess value.

39. But value is the goal of awareness and at this point we may pass to a more adequate definition of philosophy, namely, philosophy is the struggle of the awareness relation to actualize by a constantly ascending dialectic the nature of intrinsic value. Thus philosophy is not a thing nor a given point of view but a process which expresses itself, with greater or less adequacy, in all visible motion and in all organisms, and this or that human as he attains more adequately to it becomes himself a factor in a dialectic movement through which he both realizes and transcends himself, and within which he is united to all other things in a purposive trend towards a common locus of value regarding the nature of which he becomes increasingly more cognizant. Life itself is, therefore, quite literally, nothing but a manifestation of this process.

SOCIAL ENTELECHY

1. An entelechy is a coördination of universals constituting a value-bearing whole. The concretion of an entelechy is the realization of such a whole in an existential world. Such realization occurs primarily in organic life (cf. *Essay on Purpose*, pars. 7 and 24).

2. Now value, as we have seen, participates in an entelechy in so far as that entelechy is involved in, and expresses, the rationality of the independent. Such rationality engenders both the form of the entelechy and the value inherent in its form. The attainment of wholeness i.e. the attainment of rationality, is the attainment of value. Wherein this attainment exists for the individual, namely, in discernment and intellect and the freedom that arises from these processes we have previously considered. The individual, however, is a history contained within an embracing nexus of histories. This embracing nexus of histories is a society and a society realizes its entelechy in proportion as its included individuals attain the value-meaning of their respective entelechies. There is an interrelation between the two. As the individuals realize their entelechy the society realizes its entelechy and the progress of either is operative in effecting that of the other. The realization of the entelechy of a societal unit is the attainment of a culture which reflects in itself, not the dispersed objects of appearance, but the purposive coördination of rationality. It attains this end through the elevation of the cognition of the standard socius to the meaning of objective mind. It is essential in order to attain any considerable cultural advance to effect such a result. It is the standard socius who, while not the creator, is the bearer and continuer of the dialectic of cultural development.

3. Such a process, namely, the realization of a culture through the progressive modification of the standard socius requires a clear insight into the nature of the values posited as ends. It requires a correlative transition from strictly biological

to psychological purposiveness. The latter species of purposiveness can express itself in the orientation of social institutions towards the ends envisaged. It requires for its accomplishment a physical basis, a legal basis and an educational basis. It thus demands an orientation of the economic, political and educational institutions of a society towards the realization of a culture which culminates in the vision of rational order.

4. An orientation of institutions, however, towards the societal attainment of value i.e. toward the concretion of a cultural entelechy, must be a historical progress. It is something which develops through a nexus of event-particulars. There are, however, no breaks or jumps in history. There is no societal present which does not contain in its actual manifestation the causal antecedents comprehended in its past. There can be, hence, no absolute and unqualified superimposition of one type of political system, one foremade corpus of law, one intentionally constructed economic system or one set of social regulations *en bloc* on a single society or on the totality of human societies. Thus the problem of the orientation of institutions toward the attainment of a cultural acme is one to be met differently with different societies—differently in terms of their histories and the group characteristics which these have produced. In a like manner a world society cannot meet this problem except as a growth and a development. It must be effected through a purposive direction of events and not through a specious obliteration of the past. A directing element, however, contributing partially to the determination of events is never wholly absent from a community. There is an inner body of thought, more or less operative in every society, which leads it by stages through a dialectic of cultural growth to an integration of all its knowledge and all of its purposive processes. This inner moving integrative force is nothing other than philosophy itself. It is only by philosophy that special departments of investigation are colligated, that values are enunciated, that rational purposes are discerned and that a society becomes engaged in a developmental process moving to the attainment of those purposes i.e. to societal freedom.

5. This may at first seem to be an expression of what is desired rather than what is. It is, however, in fact, an expression

of what is. In every community there is a psychological tendency, irrespective of how feeble, to understand in a synoptic and not merely a fragmentary way the nature of its means and ends and to order the processes of the community in terms of that understanding. This occurs in every council meeting (or at least in those where public affairs are discussed) in every assembly, in every committee—it occurs in economic affairs, in the domestic affairs of a family, and, in fact, in all the relations of societal life. It reaches, it is true, in many instances, only an inadequate expression. And it is a process which in many or perhaps in most communities is little aware of itself. But it is present. As societal life unfolds from primitive stages, philosophy rises from primitive opinions, and as the two ascend the scale of developing culture they converge until political life and philosophy unite and incorporate into a society the consummate values of rationality, making in the justice which constitutes its order a picture of the justice which is the rational coördination of being itself. Now that such an attainment ever has been or ever will be completely achieved we do not assert; we say rather that such is the character of societal development when a society has reached a cognition of the significance of philosophy as an inner directive process. A society reaches such a cognition when and only when it has attained a knowledge of the relation between rationality and freedom. It is only then that it sees in thought a living dialectic force and not an ineffective vision. It is then, and only then that it sees that it, like all other biological processes, lies under the directive dominion of a dominant entelechy in the realization of which is comprehended its whole valuational meaning. But the attainment of this insight comes naturally and in due course and is itself outside the control of the developing society. Knowledge operates as an instrument and is thought of as such until, by the very dialectic of its growth, it is seen to be something far other than a human instrument i.e. an autonomic functioning process forming a society from within and producing, as it were, an internal directive pressure propelling that society to its entelechial development. The formative influence of knowledge in a society is nothing other than the effective causative power of an entelechy working out its own

realization. It is the guiding agency of cultural change in its ascending stages.

6. There is, however, for any cultural acme a descending as well as an ascending dialectic. The acme is the highest point of vision that the culture reaches. But the movement is cyclic. An acme is followed by a recession. These things we take to be a matter of common knowledge and it is not our object here to dwell on them. The point with which we are concerned is rather to indicate that the vision attained by successive acmes is the same. The dialectic of thought moves up to a vision of the rationality of being and of the power of the independent. With the decline of a culture this vision breaks up fragmentizes and loses itself in the plurality of particulars and the straggling desultoriness of time. Fewer and fewer individuals arise who have the opportunity and the power to see the coherence of ontological order through the eyes of logical conception. Successive generations move away towards the flux and the unordered aggregate of things thrown up by the fountain of immediate perception. Such is the reverse of the ascending development known as progress.

7. By progress thus we mean the cultural attainment of fundamental values through the manifestation of rationality in societal life. Progress is a category of value. Without value it is meaningless and for every theory of progress there is explicit or implied an antecedent theory of value. It is, however, more than a category of value: it is a category of time. Progress or retrogression are the valuational characters of temporal processes adhering to systems of particulars as they are manifested as histories in an incessantly translated awareness. They are, like other categories of time, phenomena arising out of the partiality of cognition in appearance. They are, hence, in reality i.e. in the independent, and in the infinite scope of its implication (and this constitutes the realm of being) non-extant characters. In terms of the whole i.e. of the independent, there is neither progress nor retrogression but on the contrary, timeless fruition of value. Progression and retrogression are attributes inapplicable to reality.

8. The consideration of progress, however, entails that of

control for control is essentially control for progress. Now we have seen that a society develops under the operative force of an entelechy working internally through the factors of knowledge and desire. Such a development is not unrestricted but is determined by the causal elements effective in coördinating the relations of particulars within any existential present. These relations embrace, together with all other particular things, the desires and emotions of humans. For this reason the actual endeavor of any generation to determine the character and accomplishment of future generations (wherein lies the nature of social control) is itself an expression not of that which is determining but of that which is determined—not of that which is in fact controlling, but of that which is controlled. Men control because they have a desire to control. But the desire to control is itself only an expression of that which controls desire. The desires of men arise first and are known afterwards and of the factors that determine these desires humans themselves are never wholly cognizant. Men, in short, may exercise a species of external control over themselves and other things but the desires for control and the direction they take they do not ultimately control. Nor can one generation determine, except partially and seemingly, the desires which shall motivate future generations. But if they cannot determine these desires they cannot control the course and the degree of development which a society will attain. The architect of a societal history, in sum, is something which, although active within, lies above and beyond that history. It is something of which the strivings of individuals in their coalescence, their opposition and their resultant compromise and balance are individualized manifestations. It is an entelechy—and ultimately a final entelechy—operating under such necessary conditions as the differentiations involved in a system of particulars permit. A society of humans, in the world of events, is like a colony of protozoa floating in the ocean. It is subject to winds, tides and cross-currents but it has an inner principle, namely, philosophy, which activates it, under the limitations placed on it by external circumstances, towards the realization of its entelechy i.e. to the ascendancy of a rational culture.

9. In what manner this occurs we shall presently consider.

At this point, however, it is necessary to dispel certain misunderstandings or misinterpretations, which occasionally arise with respect to the point of view in question, namely: (1) that the conception of culture as a necessary developing process asserts that a culture would advance irrespective of the activity of men i.e. whether they were active or simply dormant, and (2) that the view would somehow or other obliterate striving in men.

10. It seems hardly necessary to treat the first point because it obviously considers men as somehow outside of and disconnected from the rest of things—a position which we believe that we have sufficiently shown to be untenable. A culture will not proceed unless men make it proceed but whether or not men make it proceed depends not only on the culture itself as a causal element but on many other contributing factors as well, which are ineffaceably present. In other words, if a culture is determined by the desires and capacities of men (as operative under conditions set by external circumstances) then whatever determines these desires and capacities determines it. But these are determined by the culture itself and by the whole causal order in which it exists. And this order, moreover, is a purposive order (*Essay on Purpose*, par. 13). A culture, therefore, is a purposive process of development governed by an entelechy (*ibid.* par. 17). It is not something which humans merely watch externally as it develops but something which, because of the very strivings that are initiated within them, they participate in and engender.

11. Regarding the second point, namely: that somehow or other men would stop striving if they considered a culture as self-developing, we deny that the power to strive or not to strive lies within men themselves. If a human were to stop striving he would have to strive to stop striving which is only another form of striving itself and could only cease with the cessation of the individual. Men are, in fact, essentially nothing but strivings and the notion that their efforts could or would cease is as intelligible as the notion that the angles of a triangle, taken in their sum, might if they changed their mind, equal more or less than two right angles. The important thing, however, is not striving itself but the direction that striving takes and this, as we have elsewhere indicated, is determined in part by the point

of view according to which an individual acts. Apropos of this it may be said that the discernment and understanding of the present point of view would, rather than sublimate striving, lead to its directed integration towards the ever increasing discovery and revelation of rational order. Striving, in sum, not only would be directed, but it would be cognizant of its direction and would, above all, be aware of the consummate nature of the value inherent in the end at which it was aimed.

12. Now we say again that the vision towards which every culture works is the same. This can only be seen with clarity and hence without the appearance of arbitrariness when an adequate insight into the nature of rational structure is attained. Such an attainment, however, is a crowning achievement of thought and is not unattended with difficulty. It is a matter of time, discipline and insight. Nevertheless the development of a culture itself is none other than the cosmic process of the awareness relation which, ascending by causal necessity the scale of ontological meanings, and throwing off, by dialectic purgation, illusion after illusion, advances to a cognitional unity with rationality itself in the form of a synoptic vision.

13. Such a vision, however, because of the irreducible discreteness of its bearers must remain in time i.e. in appearance. It can never be complete irrespective of how close it may attain to that goal. But the process of attainment, when considered in this light, itself acquires a new and unsuspected attribute. It is identical with time. Attainment, value, purpose and time are incorporate elements of the same process. And no theory of time can ever be adequate which does not comprehend a theory of value—value which in its real status is changeless. Time, in short, is the movement of awareness towards eternity in a non-temporal world. It is a cycle which is ever identical with itself although in diverse realms of existential differentiation i.e. in diverse cultures. Thus in the transcending of appearance through rational cognition and in the re-descent of awareness into that appearance there rises and vanishes the pageant of histories, the procession of existential worlds which is directed to the realization of value and which, like a dream of hours that occurs in a

single instant, generates the appearance of an infinity of time which, in truth, is nothing but the instantaneity of undiscerped reality.

14. In the process of the orientation of social institutions toward the realization of values in a cultural acme we have, under the divisions of economics and politics, indicated some of the external conditions of this process. But these, i.e. economic and political institutions, exist not for themselves but for other things. They are external agencies. The attainment of value, however, is primarily an internal and not an external process and so far as humans are concerned, it reaches its concretion in actuality, through the progressive modification of the emotions by intelligence. The emotions furnish and constitute the motives which activate men. It is, to be sure, not in the emotions alone that value resides but it is through them that it becomes effective in its guiding determination—its directive grasp—of a history. Value is revealed by intuitive cognition and in its revelation it pulls the desires to it. In so doing, however, it also pulls the whole societal history within which they exist, towards it. This process, however, is one of temporal development and it obviously does not begin, itself, with attainment—since if it did there would be no development—but with its opposite. In order, therefore, to discern the character of the process of societal attainment it is necessary to consider not only the nature of the psychological attitude which represents its achievement and its end, but also that which represents its opposite and its starting point. By the latter we refer to the phenomenon of barbarism.

15. Barbarism is a wilderness of unordered passions which, in response to an unselected torrent of incoherent stimuli pushing into the organism from the outside, extend and point in all directions. It disperses the emotional energy of man and leaves him a prey to triviality, caprice and conflict. It is accompanied and augmented by a provincialism of outlook emphasizing the separateness of all perceived things, obscuring the nature of value and striding over with unwitting exultation, according to the passions of the individual, those things whose worth can be comprehended only by discipline and intelligence. Barbarism

is the insouciant and naïve selfishness which prevails in the psychology of a man controlled by ponderous and insensate strivings for indiscriminate self-aggrandizement, without himself being cognizant of it. It is blindness. The passions which motivate it whether of sympathy, admiration, arrogance or anger are blind passions. It is the picture and reflection of time in the psychology of humans and in its flux, as in the flux of time, because it is blind, it is ruthless. Its emotions are intense but, because they are based on accident and caprice, they are trivial. Every hue and cry deceives it and in its deception it becomes wound up in its own conflicts and its own coils. It is never even in its triumphs but a step away from tragedy and tragedy is the only thing that can enlighten it. At times it has been thought that in barbarism there is strength. On the contrary, in barbarism there is the most pitiable of impotence—the impotence of exalted self-deception.

16. Now barbarism has one and only one locus, namely, the hearts of men. Externals have nothing to do with it. They are appendages which do not touch the psychology of the individual. Nor does barbarism depend on period or age. It is probable that in prehistoric times there were men less essentially barbarian than many contemporaries. Barbarism is not, in other words, a historical but a psychological phenomenon. The common notion of measuring the civilization of an age by the number and efficacy of its implements is only an alogism of current opinion. It is like measuring the worth of a city by its size instead of the character and attainment of its inhabitants. A man can ride in a railroad, live in a skyscraper, own an industry and still be a barbarian. The distinguishing marks of value as incorporated in a human personality do not lie in these things.

17. The question is thus awakened: wherein arises the transcendence of barbarism and the societal attainment of value? In the dialectic movement of a culture across the history of a society the individuals and the group pay the penalty of tragedy for the unenlightenment of the strivings which propel them. This generates the enlightenment of pain (e.g. that arising in the glorified butchery concomitant with war) which is neither complete nor satisfactory but which is that alone effective on the

broken surface of barbarism. Now the object of a societal striving involves a transition from the latter state to one of rational attainment. In this transition as we have indicated there must be a progression of the standard socius to more complete valuational levels. The standard socius is the soil in which a culture lies and it is only by the modification of his nature that any lasting advance in the culture is possible. We have seen, however, that inertia is a characteristic of mass opinion. Since the standard socius is the bearer of mass opinion it follows that if he is to be moved, it must be from without. If opinion rested with the standard socius only, the culture of a group would stagnate, or crystallize into a fixed and oppressive ritual. History would now be creeping into the forms of archaic civilization.

18. The problem of societal attainment lies then in the modification, according to the ends of enlightenment, of the standard socius. This modification involves the selection of hereditary stock and its subjection to an educational method constantly developing in its effectiveness. The former problem is a matter for geneticists. It may be said, however, that the experimental basis for the science of heredity is laid with considerable completeness and there remains for accomplishment the application of it to the production of well-endowed humans i.e. an exacting selection of genes carried out over a succession of generations. The problems, however, concerned with the hereditary improvement of the standard socius can only be solved when a culture has advanced in enlightenment considerably beyond any point hitherto attained. This solution is met by the formidable exigency (passing over as evident the resistance of traditional conservatism) that in case it were carried out with the consent of the standard socius himself, it would imply a degree of intelligence which would all but make it unnecessary. If, however, such intelligence were absent the rationale of the process of selection could hardly be understood much less sympathized with.

19. But whatever progress in the determination of a valuable hereditary stock might be effected, a society would nevertheless require for the realization of its greatest cultural development an accompanying improvement in educational method based on the most exact available data from the psychology of learning.

This applies particularly to the education of children. It means an improvement, such as that now in progress, in the methods applicable to the learning of reading, handling of arithmetical concepts and in the establishment of preformative or anticipatory habits leading to the power of logical cognition and its intelligent application to conduct. The learning rate of a human is limited by the nervous equipment with which he is endowed. But in a culture ever multiplying in the complexity of its traits and in the abundance of stimuli which it throws into the responding organism the acceleration of this rate within the limits of capacity for general development is essential. It is primarily by the intelligent functioning of knowledge that the human organism can adapt itself to a differentiating culture and can bring, despite the manifold of cross influences to which it is subjected, the simplicity of reason into its purposes, its emotions and its life. The development of educational method has already indicated what may be done in accelerating, where a hereditary basis is given, the actual rate of learning.

20. This method, however, can receive considerable auxiliary influence from another social process to which it is closely allied, namely, the simplification of social instruments and in particular, language. The time may never be reached but its conceivable possibility is not precluded when a scientifically created language, far richer in expressive power, far simpler in construction, much more flexible in rendering fine shades of meaning, astonishingly greater in economy and superior in its precision will supplant, or at least concur with, the desultory and limited natural languages. It may be objected that such a language would undergo the same aberrations as natural languages. That it would change and develop goes without saying. But that it would degenerate does not follow. Even, at present, with the degree of rational discipline which prevails there is a considerable and effective effort to clarify and purify current language. If so now, it is justifiable to suppose that it would be more so in a community sustaining a thorough intellectual discipline and hence recognizing the significance of language as the basic social implement in comparison with which all others pale into insignificance. With the development of such a language the rate of learning for a

generation would not only be increased but would be accompanied by a facility of use rendering learning unobstructive to the other organic functioning of a growing child, thus introducing an economy of effort into both learning and teaching. Already the rate of learning in reading and similar subjects has been remarkably increased over that of previous centuries. With the improvement of language and other social implements a child of the future would have more insight with more healthy development at eight than a contemporary at twelve. The general advance of knowledge in the future will require that every element of information compatible with a child's whole physical and psychological growth be conveyed to it in order that it can, as an adult, if the desire is awakened in it, be brought up to the level of its contemporary thought and thus participate in the inner developmental process of its group moving towards the realization of its societal entelechy.

21. By these methods a growth of discernment is effected and a rational grasp of ontological relations is acquired which determines public opinion and profoundly moulds the whole of societal life. There is a coalescence of divided attainments in knowledge to a focussed and comprehensive point of view—i.e. to a philosophy. Philosophy, however, although it involves, is more than cognition alone. It is, as we have seen, a process of nature, determining from within, the exfoliation of a culture. Only when a culture, however, has passed the primitive stages of its development does philosophy become explicit in its thought and its expression and coalesce with and direct societal processes to an awareness and realization of the successive levels of valuational attainment through which its culture can pass. Philosophy is a union of desire and knowledge rendered manifest in the advanced stages of social development. It is the conative-cognitive physiology of a developing societal unit. Since, moreover, rationality is monoeidic, and non-temporal, i.e. constant, the end to which all instances of philosophy converge is the same. This does not mean that all philosophies are the same. It means simply that dialectic paths converge to the synoptic vision of rationality, i.e. to a cognizance of the power

of the independent. Developing philosophies like developing societies differ. Each exists in relation to the peculiar conditions of its carrier. And each, in the dialectic of its unfoldment, attains, at any moment, a different level of discernment. Each, however, has an end in common with others. It is only when a philosophy becomes stagnant, static, inert and does not push the dialectic of its development through successive stages of research and self-criticism that it recedes from this end and falls back, of necessity, into the romantic incoherence of pluralism or assumes a corpse-like imitation of life in the form of a verbal ritual. But the notion, on the other hand, that a body of thought ever reaches the ultimate end of philosophy—which notion some thinkers have had the childishness to entertain—is merely an indication of intellectual provincialism. There are realms to be examined of whose being we know, but of whose structure and relations we have barely a fleeting intuition. There are existential worlds visible only through logical intuition whose brink the most far seeing eye of the human mind discerns with difficulty. There are no unintelligible realms but there are domains of being whose detail falls outside the scope of awareness of terrestrial organisms. Philosophy, hence is a dialectic and not a completion. It must continually expand and re-express itself. It is an enlarging explication of the intellect of the independent and is as infinite as the realm of being which constitutes that intellect. Part of the final word of philosophy, in sum, is that no single philosophy can ever speak the final word.

22. But philosophy is, as we have said, something more than thought as thought is sometimes artificially distinguished from action. It is a natural, living, biological process realizing itself in a societal unit. It is rational vision woven as a directive ingredient into a history as a way of life. And therefore, with Aristotle, as cutting is to an axe or as seeing is to an eye, so philosophy is to man. It is the union of action in the form of attainment, with intelligence in the form of knowledge. And we come, thus, to our last and perhaps most significant definition: by philosophy, namely, we mean social *entelechy*. As such it is the *entelechy* which comprehends and coördinates all other value-bearing processes and integrates them, within the limits laid down for finite

things, into a cultural whole. It is the process, working from within, which obviates scatteredness, irrelevance and triviality in societal striving and in so doing renders manifest, in an actual living world, the value—whose essential nature we have endeavored to indicate—inherent in the meaning of rationality.

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